DOCUMENT RESUME

ED 325 185 JC 900 588

TITLE	Vocational Outcomes in Washington Community Colleges. Baseline Report. Operations Report NO. 90-2.
INSTITUTION	Washington State Board for Community Coll. Education, Olympia.
PUB DATE	Oct 90
NOTE	82p.
PUB TYPE	Tests/Evaluation Instruments (160) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC04 Plus Postage.
DESCRIPTORS	Academic Achievement; College Graduates; Community Colleges; *Employer Attitudes; Employer Employee Relationship; Followup Studies; *Graduate Surveys; Organizational Effectiveness; *Outcomes of Education; *Program Evaluation; *Student Attitudes; Two Year Colleges; *Vocational Education
IDENTIFIERS	*Washington

ABSTRACT

In response to requests by the Washington Higher Education Coordinating Board for a systematic approach to student outcomes assessment, and in an effort to identify potential areas for improving the quality of community college education, the State Board for Community College Education conducted a vocational outcomes study in 1989. The study examined educational achievement of the 14,096 vocational preparatory "completers" (defined as those students who left the college after completing at least 10 vocational credits); employment outcomes and satisfaction of a sample of 955 surveyed completers; and satisfaction of employers as measured by a sample survey of 1,033 employers of community college graduates. The study findings included the following: (1) 94% of completers met their goal while in college; (2) 73% of completers said that their community college experience "definitely improved" the quality of their life; (3) African Americans and Native Americans left their colleges with the lowest levels of course completion; (4) 85% of employed completers were in jobs related to their training; (5) 74% of those employed before training increased their earnings after completing their education; (6) minority completers were more likely than whites to be in temporary jobs or in jobs not related to their training; (7) 87% of employers were "very satisfied" or "somewhat satisfied" with the work performance of community college graduates; and (8) 26% of employers were "dissatisfied" with graduates work habits and attitudes. Data tables and survey instruments are included. (PAA)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Operations
Report
No. 90-2

ED325185

VOCATIONAL OUTCOMES IN WASHINGTON COMMUNITY COLLEGES

BASELINE REPORT

A REPORT PREPARED BY THE
STATE BOARD FOR COMMUNITY COLLEGE EDUCATION

OCTOBER 1990

JC 900588

FOR MORE INFORMATION CONTACT:

LORETTA SEPPANEN
STATE BOARD FOR COMMUNITY COLLEGE EDUCATION
319 - 7TH AVENUE, MS: FF-11
OLYMPIA WA 98504
206-753-3685

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

R. Bell

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

X Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy

ACKNOWLEDGEMENTS

A Vocational Outcomes Research Review Group assisted the State Board for Community College Education (SBCCE) staff with this study. Members were: Dick Armstrong, Barb Bennett, Don Bressler, Charles Coddington, Pat Green, Ray Harry, Jeffrey Jaksich, Paul McCarrell, Chris Miller-Panganitan, Mildred Ollee, Loretta Seppanen, Phil Swanberg.

The Washington Association of Community College (WACC) Student Outcomes Task Force oversaw this study and related outcomes research and activities. Members are:

Greg Fitch (90-91)
Jean Floten (89-90)
Jim Ford (90-91)
Pat Green (90-91)
Ron Hamberg (89-91)
Arnie Heuchert (90-91)
Bruce Kochis (89-91)
Susan Mancuso (88-91)
Charles Mitchell (90-91)
Bill Moore (90-91)
Ray Needham (90-91)
Carl Opgaard (89-90)
Wally Simpson (89-91)
Steve Van Ausdle (88-89)
Sandy Wall (89-91)
Jan Yoshiwara (89-91)

The assistance of 1,033 employers and 955 former students who responded to the surveys is sincerely acknowledged. Without their input there would have been little to study.

South Puget Sound Community College students and advisory groups assisted with the pilot study of the survey instruments. Numerous individuals within the community college system and the business community also reviewed survey drafts and provided suggestions for changes.

Staff from the Employment Security Department who assisted with the data matching were Gary Bodeutsch, Jeffrey Jaksich, Kent Meneghin, Bill Pruett, and Peter Syben. Carol Jenner from the Office of Financial Management provided the data matching with the Applications File.

The Social and Economic Sciences Research Center, Washington State University, conducted the Survey of Washington state employers and provided the model for the discussion of potential error in both sample surveys used in this study. The Gilmore Research Group, Seattle, conducted the phone portion of the student satisfaction survey.

Irv Lefberg and Bryan Wilson of the Office of Financial Management provided valuable input on the survey design and design of the analysis as it related to the governor's Investment in Human Capital Study. Battelle's Human Affairs Research Center, Seattle, also provided input for the analysis, especially related to categories for industries and regions.

SBCCE staff participating in the study were Jackie Eppler-Clark, Holly Clausen, Maureen Kennedy, Robert Kurtz, Deralyn Gjertson, Fred Romero, Loretta Seppanen, and Bob Wark.

EXECUTIVE SUMMARY

INTRODUCTION

The mission of Washington community colleges is to "offer comprehensive educational, training and service programs to meet the needs of both the communities and students served by combining, with equal emphasis, high standards of excellence in academic transfer courses; realistic and practical courses in occupational eduction...; community services of an educational, cultural and recreational nature; and adult education." (Community College Act of 1967; RCW 28B.50.040(2)). One method of ensuring "high standards of excellence" is to assess whether students achieve the objectives expected of them. This type of evaluation is called "student outcomes assessment."

While each community college assesses student outcomes in a variety of ways, there has been no comprehensive, **system-wide** assessment of the community college mission since its founding in 1967. The current impetus for system-wide student outcomes assessment has gained strength from two external forces: 1) a national movement among legislators and public opinion leaders seeking ways to make judgements about the quality of higher education before investing additional funds; and 2) the Washington Higher Education Coordinating Board (HECB), which is interested in institutional improvement and quality.

This report is one of several being prepared in cooperation with individual community colleges by the State Board for Community College Education (SBCCE) to respond to the HECB request for a systematic approach to student outcomes. The other SBCCE studies include transfer outcomes, basic skills outcomes, and writing and quantitative skills development. By identifying the strengths and weaknesses of the community college programs, these studies will meet both the need to be accountable for state tax dollars and the desire to identify potential areas for improving the quality of community college education.

During the next six months, the community college system will be determining if and how it can address the findings reported here to improve the quality of vocational outcomes. The Washington Association of Community Colleges Student Outcomes Task Force will prepare a report on the action steps developed over the next six months.

These findings represent a baseline for future research. The SBCCE will conduct similar surveys every two years. The rest of the study will be replicated annually as an assessment of the outcomes of each group of students leaving community college vocational programs.

STUDY DESIGN

The vocational outcomes study focused on community college education which prepares students for entry level employment (vocational preparatory education). The report does not examine those students enrolled primarily to upgrade their skills in their current job. That topic will be studied in 1990-91.

The study examined outcomes of vocational preparatory education in four ways:

* **Educational achievement** of the 14,096 vocational preparatory "completers".

* **Employment outcomes** for the 14,096 "completers" as measured by matching SBCCE files with Washington's unemployment insurance records and as measured in the sample survey of 955 "completers".

* **Satisfaction of "completers,"** as measured by the sample survey.

* **Satisfaction of employers,** as measured by a sample survey of 1,033 employers of community college "graduates".

SBCCE staff conducted the study between August, 1989 and October, 1990 with assistance from many professionals within and outside the community college system. The 1990 Washington State Legislature provided the funds specifically for this study and the other community colleges outcomes-related projects.

"COMPLETERS"

All vocational preparatory students who leave the college after completing 10 or more vocational credits are considered "completers."

There are two types of completers: program and course completers. Each type is further divided into two categories:

PROGRAM COMPLETERS

- degree completers
- certificate completers

COURSE COMPLETERS

- attending 1 year or more
- attending less than one year

"Graduates"

Employers were asked to evaluate the skills of community college "graduates" they had hired. While the survey directed the employers to think of vocational graduates, it is possible employers also rated academic graduates and other students who had not completed their programs when they left the college (course completers).

SUMMARY OF FINDINGS

The study found that both employers and completers were positive about the outcomes of community college vocational preparatory education. Completers generally achieved their educational goals. In terms of the completers' employment outcomes, most were employed in permanent jobs which related to their training and appropriately used their skills, resulting in increased earnings. Employers and those who completed the programs were satisfied with the training.

The following sections outline the findings related to: 1) educational achievement, 2) employment outcomes, and 3) completers and employer satisfaction.

I. EDUCATIONAL ACHIEVEMENT

FINDINGS: Almost all students met their goal while enrolled, whether the goal was a degree, certificate or completion of selected courses. Most said their experience improved their quality of life. Nearly half said that they had already or would soon start on the path of lifelong learning:

* 94 percent of completers met their goal while in college.

* 73 percent of completers said their community college experience "definitely improved" the quality of their life. Another 20 percent said it "probably improved" quality of life.

* 44 percent of completers said they were either already enrolled in further education or planned to enroll within the next year.

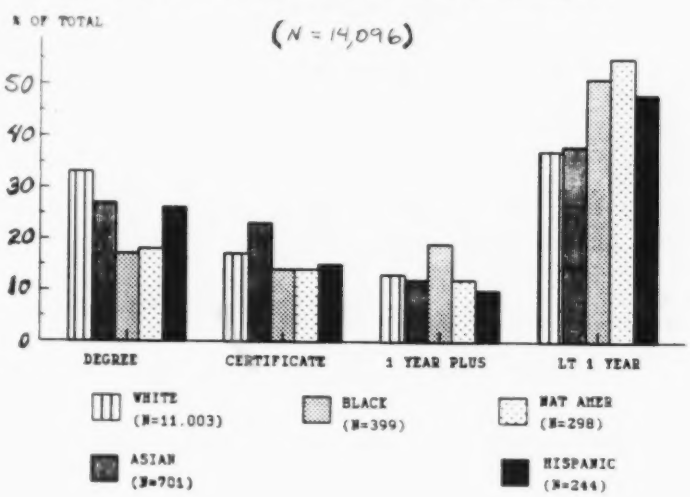
POTENTIAL ACTION ITEMS: African Americans, Native Americans, Hispanics, single parents who pursued vocational preparatory training, and GED starters (those who started vocational education after completing the test of General Educational Development (GED) rather than with a high school diploma) had lower educational achievement than other vocational completers. Distinguishing characteristics among the groups were:

* African Americans and Native Americans left their colleges with the lowest level of completion -- more than half with less than one year of study (51 and 55 percent, respectively).

* Nearly as many Hispanics in vocational programs left the college after less than one year of study (48 percent).

Graph I

1987-88 VOCATIONAL COMPLETERS
BY RACE/ETHNIC CATEGORY AND TYPE OF COMPLETION



* 24 percent of GED starters who sought vocational training and 25 percent of single parents left with degrees, a rate considerably below the average of 33 percent for all 1987-88 vocational completers.

II. EMPLOYMENT OUTCOMES

FINDINGS: The study measured employment outcomes in terms of the percent of vocational preparatory completers employed in jobs related to their training. Another group of measures looked at the percent who were in regular jobs (versus temporary positions), in jobs at the appropriate level for their training, and in jobs which resulted in increased earnings compared to their earnings before training. Most completers were very successful in finding jobs related to their training. Most completers were also successful in finding regular positions which fully used their training and resulted in increased earnings.

The following summarizes the findings:

* 85 percent of employed completers were in jobs related to their training.

* 83 percent of those who successfully sought jobs were in regular (as opposed to temporary) positions.

* 81 percent of those who successfully sought jobs were in positions which were appropriate to their level of training.

* 74 percent of those employed before training increased their earnings after completing their education. About 90 percent said the college had an impact on that increase.

POTENTIAL ACTION ISSUES: While all vocational completers shared positive employment outcomes, some were somewhat less successful in obtaining jobs related to training. Some were more likely than others to be in temporary jobs, in jobs below their skill level, or earning less than they earned before enrolling.

Those who had less success in employment outcomes were vocational preparatory completers who were:

* Asian American and Pacific Islander, African American, and Hispanic.

* Speakers of English as a second language.

* Single parents.

* Disabled.

* Starting college with a GED (test of General Educational Development) rather than a high school diploma.

* Enrolled to explore a career direction.

Asian Americans and Pacific Islanders, African Americans, and Hispanics who completed vocational education were more likely than whites or Native Americans to have had poorer employment outcomes. They were more likely to be in temporary jobs or jobs not related to their training. Those for whom English was a second language were more likely to have jobs not related to their training or be unemployed than were native English speakers.

Single parents who completed vocational education were more likely to be in temporary jobs unrelated to their training. Disabled vocational completers had poorer outcomes than others in terms of jobs related to training. Those who started college with the GED and then completed vocational training had poorer employment outcomes than those who started with only a high school diploma.

About 26 percent of vocational preparatory completers enrolled to explore a career direction rather than to take courses related to current or future work. They had poorer employment outcomes than those enrolled for more specific job-related reasons.

Employment outcomes also differed by level of completion and college major:

* **Level of completion:** The higher the educational achievement (degrees versus certificates), the more positive the employment outcome.

* **College major:** As groups, office and accounting (especially bookkeeping) majors and business management majors had poorer employment outcomes than completers in other fields of study.

III. COMPLETER AND EMPLOYER SATISFACTION

FINDINGS: Both employers and vocational preparatory completers gave the colleges high marks on a variety of satisfaction scales. Two examples were:

* 87 percent of employers of community college graduates were "very satisfied" or "somewhat satisfied" with their work performance.

* 77 percent of completers were satisfied with the quality of instruction (gave ranks of 4 or 5 on five point scale).

POTENTIAL ACTION ISSUES: Even when completers and employers gave their lowest ratings, they still affirmed the high quality of training offered at community colleges. Lower ratings suggest areas in which the colleges could become even better. The lowest satisfaction ratings were:

* 37 percent of employers of community college graduates were "dissatisfied" with one or more of the graduate's adaptive skills, especially writing, spelling, math, reasoning and prioritization skills.

* 26 percent of employers of community college graduates were "dissatisfied" with graduates work habits and attitudes.

* 18 percent of vocational completers were "dissatisfied" with their college's effort to provide job search assistance.

"Adaptive Skill"

The following skills, called "adaptive skills" as opposed to specific skills needed for a particular job, allow vocational completers to adapt quickly to changes, perform abstract work, work in teams, and assume decision-making authority:

Writing and speaking effectively
Spelling accurately
Math skills
Reasoning and problem solving ability
Ability to adapt to changes in the job
Ability to make judgements
Ability to prioritize work
Ability to work with others

* 11 percent of vocational completers were "dissatisfied" with their opportunity for interaction with faculty outside of class.

CONCLUSIONS

Vocational preparatory education in Washington community colleges received high marks from both completers and employers. Community college training effectively prepares most students for the job market. The quality of training can be further enhanced by improving job search assistance and adaptive skills training. Additional attention may be required to assure equal success in educational and vocational outcomes for all students in all fields of study.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENTS i

EXECUTIVE SUMMARY
- Introduction ii
- Study Design iii
- Summary of Findings iii
- Conclusions vii

TABLE OF CONTENTS ix

CONTEXT OF THE STUDY
- Problem Statement 1
- Description of Vocational Preparatory Training 2

STUDY DESIGN
- Four Sources of Data 6
- Study Time Line 8

I. FINDINGS: DESCRIPTIVE CHARACTERISTICS
- Findings 9
- Potential Action Issues 13
- Further Research Issues 13

II. FINDINGS: EDUCATIONAL ACHIEVEMENT
- Findings 13
- Potential Action Issues 15

III. FINDINGS: EMPLOYMENT OUTCOMES
- Findings 16
- Potential Action Issues 21
- Further Research Issues 21

IV. FINDINGS: EMPLOYER AND COMPLETER SATISFACTION
- Findings 22
- Potential Action Issues 26
- Further Research Issues 27

CONCLUSIONS 27

APPENDICES
- A Vocational Preparatory Follow-up File
- B Pilot Study: Using Other Agency Databases to Identify the Employment and Educational Outcomes of Vocational Preparatory Completers, Spring and Summer, 1990
- C 1987-88 Student Satisfaction Mail and Phone Survey Methodology; Spring 1990
- D Survey of Washington State Employers, Summer 1990
- E Related Outcomes Research Projects
- F WACC Student Outcomes Task Force and Vocational Preparatory Outcomes Research Review Group Membership

CONTEXT OF THE STUDY

Problem Statement

What are students gaining from their community college education? Is the state receiving educational quality for the tax dollars it spends at each public college and university? These questions are being raised in Washington and around the country as educators and public policy makers assess the "student outcomes" of higher education.

Washington community colleges are committed to providing high standards of excellence in the instruction and services they provide. Each community college assesses student outcomes in a variety of ways: faculty evaluation of students' learning, feedback from four-year institutions on the progress of transfer students, job placement information about former vocational preparatory students, and advisory group input. There has, however, been no comprehensive, system-wide assessment of community college student outcomes.

The Higher Education Coordinating Board (HECB) took the lead in fostering comprehensive assessment by passing a requirement for a system-wide "performance evaluation program" at its May 18, 1989 meeting. The Washington State Legislature supported the HECB requirement by providing $400,000 for the 1989-91 biennium for each four-year institution and the community college system to implement the performance evaluation program. Further, legislative leadership expressed interest in increasing funds for higher education if lawmakers could be assured that new monies would address quality improvement. The legislature sees systematic assessment of student outcomes as central to future funding enhancement.

National and state-level interest in student outcomes assessment prompted the community college presidents, through their organization, the Washington Association of Community Colleges (WACC), to form a Student Outcomes Task Force in 1987. That group asked the State Board for Community College Education (SBCCE) staff to design a research agenda which would meet the state's growing need for accountability in order to assure quality in the community college system.

The SBCCE staff and the WACC Student Outcomes Task Force identified five research projects:

* Academic/Transfer Outcomes
* Vocational Outcomes
* Developmental Studies/Basic Skills Outcomes (below college-level)
* Assessment of Writing Skills
* Assessment of Quantitative Skills

Each project looks at the outcomes of community college education from a system-level perspective and complements existing college-level accountability activities. Each study was designed to confirm known strengths and weaknesses in educational delivery. A further goal was to identify previously unknown shortcomings. The SBCCE staff conducted the research for each project with assistance from a research review group representing the colleges.

The subject of this report is the outcome of vocational preparatory education. In recent years about 14,000 individuals completed courses or programs in preparatory vocational education at the community colleges. A study of vocational education for the 41,000 individuals enrolled each quarter to upgrade their current job skills will be completed in 1990-91.

This report examines community college effectiveness in training the 1987-88 class of vocational preparatory students for placement in fields related to training. "Effectiveness" was measured in four ways:

* Educational achievement of the 14,096 vocational preparatory completers.
* Employment outcomes for the 14,096 completers as measured by matching SBCCE files with Washington's unemployment insurance records and as measured in the sample survey of 955 completers.
* Satisfaction of completers as measured by the sample survey.
* Satisfaction of employers as measured by a sample survey of 1,033 employers of community college graduates.

The vocational outcomes research study complements existing assessment activities related to vocational education: five-year assessments of all vocational programs at the campus level, program reviews for the start-up of new programs and evaluation for potential elimination of programs, campus-level program evaluations, and accreditation.

The study meets the 1989 HECB requirements of providing baseline data for accountability purposes, surveying former students, and assessing the satisfaction of employers. The study also identifies for the community college system potential action issues based on the study findings. During the six months following publication of the study results, the community college system will determine if and how it can address these action issues.

Description of Vocational Preparatory Training

The goal of community college preparatory vocational education programs and courses is to deliver effective employees to the work force. Community colleges aim to produce course and program completers who are both immediately employable in entry-level positions and sufficiently skilled for future employability. Well-rounded vocational preparatory completers possess flexibility, problem solving skills, and an interest in continuing their education.

Size of the Preparatory Effort

In each of the past several years about 14,000 students have left community colleges after having completed selected courses or a formal program of study in one of 378 community college vocational preparatory occupations. While that number seems small in comparison to the 336,000 people who enroll at community colleges each year, it is of substantial size when described in terms of full-time equivalency.

The 336,000 students who enroll annually represent 100,000 full-time equivalents (FTEs). The three to one conversion is due to the large enrollment of students,

mostly those upgrading job or basic skills, who enroll for only one or two courses during the year. Vocational preparatory completers represent about 10 percent of the 100,000 annual FTEs. In addition, vocational preparatory education students expecting to complete their program in a year or two enrolled for about 20,000 FTE. When the completers and those still enrolled are combined, vocational preparatory students account for about 30 percent of the total FTE. The remaining non-vocational preparatory FTEs are either students preparing for transfer (about 10,000 transfer each year), upgrading current job skills, gaining basic skills, taking non-state-supported personal interest or customized training courses, or preparing for retirement or parenting.

Programs Offered

All 27 community colleges offer vocational preparatory programs. Table I shows the 378 occupations summarized in 15 broad program areas and displayed by the percent of all completers in each area. The largest of the preparatory programs, in terms of the number of completers, is Associate Degree Nursing (ADN). Washington employers put to work more than 700 ADN completers each year.

TABLE I
VOCATIONAL PREPARATORY COURSE AND PROGRAM COMPLETERS BY PROGRAM AREA FROM 1987-88 VOCATIONAL PREPARATORY FOLLOW-UP FILE

Program Area	Number	% of Total	% Female	% White
Accounting/Bookkeeping	694	5%	75%	80%
Agriculture and Renewable Resources	365	3%	47%	93%
Business Management	1,011	7%	44%	87%
Data Processing	578	4%	50%	85%
Early Childhood Education	295	2%	95%	85%
Electronics and Electrical	689	5%	9%	83%
Engineering and Related	566	4%	22%	93%
Graphics and Commercial Arts	352	3%	49%	85%
Hospitality and Recreation	619	4%	42%	88%
Marketing and Sales	559	4%	79%	89%
Medical Related	2,937	21%	72%	90%
Mechanics and Related	1,682	12%	5%	84%
Manufacturing/Machinist/ Welding	546	4%	10%	89%
Office Occupations	1,582	11%	96%	87%
Personal Services	209	1%	88%	68%
Public Service	861	6%	53%	92%
Transportation Services	145	1%	19%	89%
Other	288	2%	59%	92%
Total	14,096	100%	55%	88%

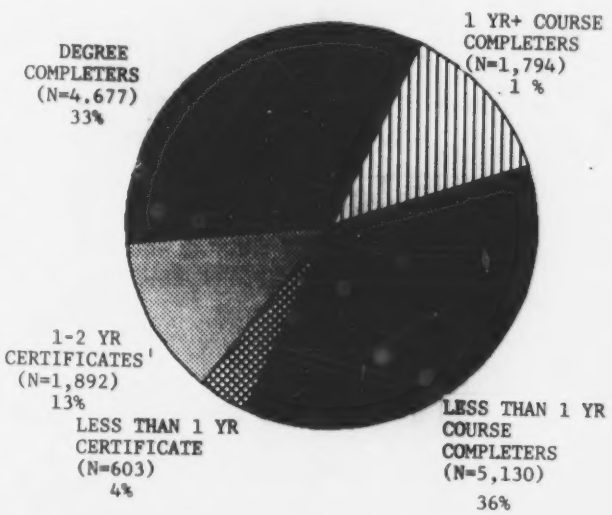
Types of Vocational Completers

Any student who, when they enrolled, said they were preparing for a job in a vocational field and subsequently graduated or left the college after completing at least 10 credits in vocational courses (two or more courses) is regarded as a "vocational preparatory completer." "Completers" are of two types:

* Program Completers: Complete a formal program of study and graduate with a degree or certificate.

* Course Completers: Complete courses, which may or may not parallel those taken by program completers, and leave the college without graduating from the program.

Graph II
1987-88 VOCATIONAL COMPLETERS
BY TYPE OF COMPLETION
(N=14,096)


1 YR+ COURSE COMPLETERS (N=1,794) 1 %
DEGREE COMPLETERS (N=4,677) 33%
1-2 YR CERTIFICATES (N=1,892) 13%
LESS THAN 1 YR CERTIFICATE (N=603) 4%
LESS THAN 1 YR COURSE COMPLETERS (N=5,130) 36%

The number of 1987-88 completers in each type is shown in Graph II.

Degree completers have the highest level of exposure to academic courses and advanced technical courses. Their program assures acquisition of both knowledge and adaptive skills. Because degree completers must stay to complete at least 90 credits, they are more likely to have been exposed to support services, such as counseling, advising or assistance with their job search.

Certificate completers take a curriculum which focuses more on required skills for a particular job rather than on the adaptive skills inherent in the degree program. Certificates, generally, but not always, take fewer credits to complete than the degree. Most students complete certificate programs of at least a year in duration (1,892 or 13 percent of the completers did so from the 1987-88 class). Some certificate programs require less than a year of study. In 1987-88, four percent of the completers (603 students) completed these short-term certificate programs.

Certificates are not offered in all of the 378 fields. Table II shows the eight of the 15 program areas that offer 75 percent of the total certificates. The table also shows the percent of total awards (degrees or certificates) that were certificates. Bookkeeping is the only field in which all formal awards are certificates; no degrees are offered.

Course completers are students who leave without a degree or certificate. They may or may not have taken academic courses and gained adaptive skills. Short-term course completers generally do not receive career search assistance.

TABLE II
1987-88 CERTIFICATE FIELDS
BASED ON VOCATIONAL PREPARATORY FOLLOW-UP FILE

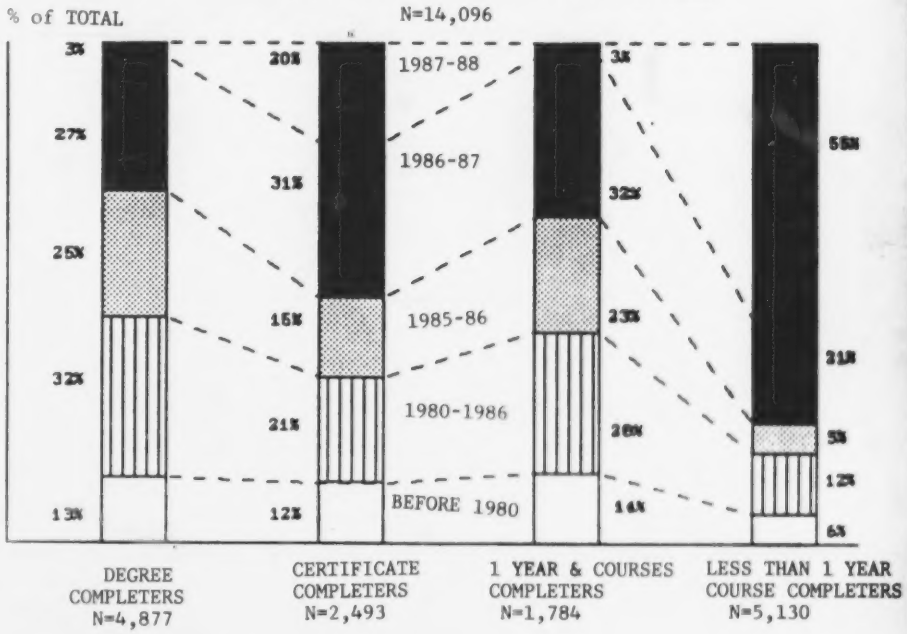
Program Area/Field	Certificates as a % of Total Awards (N = 7,172)	% of Total Certificates (N = 2,495)
Accounting		
Bookkeeping	100%	3%
Hospitality and Recreation		
Food Services	71%	6%
Mechanics and Related		
Carpentry	69%	1%
Mechanics	55%	10%
Personal Services		
Cosmetology	64%	2%
Medical Related		
Allied Health	57%	33%
Office Occupations		
All Fields in Program Area	51%	14%
Transportation Services		
All Fields in Program Area	51%	2%
Manufacturing/Machinist/Welding		
Machine Shop/Welding	47%	4%

Note: "Allied Health" includes nursing assistance, licensed practical nurse, dental assistant and hygienist, medical assistant and human services workers.

Enrollment Pattern

A slight majority (51 percent) of the 1987-88 vocational preparatory completers finished their education in two years or less (i.e. started in 1986-87 or 1987-88, see Graph III). Among degree completers, 30 percent completed in two years. Those who took longer to complete either enrolled part-time and stopped-out along the way or took more than 90 credits, typically for developmental (pre-college) courses in math or English.

GRAPH III
YEAR OF FIRST ENROLLMENT BY COMPLETION TYPE
BASED ON 1987-88 VOCATIONAL PREPARATORY FOLLOW-UP FILE



The majority (60 percent) of the 1987-88 class completed their vocational preparatory education in the traditional pattern at the end of spring quarter. About 18 percent completed at the end of winter, 16 percent in fall and 6 percent in summer 1987, which is regarded as the first term of the 1987-88 academic year.

STUDY DESIGN

Four Sources of Data

This report's findings are based on four key information sources. (See Appendices for technical details.)

1. **Vocational Preparatory Follow-up File:** In 1990, SBCCE created a file describing the 1987-88 vocational preparatory completers. The file was based on data from each college's transcript file and SBCCE's Student Management Information System (SMIS). The file provided a single record, with information about the student and the courses he or she had taken for each student who had left the college from a vocational program. See **Appendix A** for details.

2. **Pilot Study: Using Other Agency Databases to Identify the Employment and Educational Outcomes of Vocational Preparatory Completers, Spring and Summer, 1990:** As part of this research, the SBCCE conducted a pilot study to test the effectiveness of matching the follow-up file with the administrative data files maintained by the Department of Employment Security (ES) and by the Office of Financial Management (OFM) to provide information on the employment and education status of completers nine months after they left the college. The matching process proved to be both useful and cost effective for the purpose of outcomes assessment. See **Appendix B** for details.

3. **1987-88 Student Satisfaction Mail and Phone Survey: Spring 1990:** 955 vocational completers responded to a survey conducted 20 months after they had left the college. The respondents represent program completers and employed course completers who finished at least 45 credits. With the exception of certificate completers, those who left vocational programs before completing a year of courses were not included in the study.

The survey design assured sufficient responses from Hispanics, Whites, Asian and Pacific Islanders, African Americans and Native Americans to allow for generalizations about each group.

As with any sample survey, generalizations about the entire population of vocational completers and about future cohorts of completers must be drawn with the recognition that there is potential for error inherent in both the survey and sampling process. See **Appendix C** for a complete discussion of the potential sources of error and the efforts made to maximize the ability to generalize from the results.

The survey sample did not represent the 36 percent of completers who left with less than one year of vocational study. It is limited to satisfaction and outcomes measures for degree and certificate recipients.

4. **Survey of Washington State Employers, Summer 1990:** Senate Bill 6411, passed by the 1990 Legislature, mandated that the Office of Financial Management (OFM) with the advice of a newly-formed Council on Investment in Human Capital, "administer a study of the training needs of the state's work force, businesses, and the economy, including an evaluation of the training system." Part of that study was an employer survey. Given the timing and importance of this study, SBCCE coordinated its research needs with OFM so that a single survey could meet both the legislative mandate to OFM and the vocational outcomes research needs. More than 4,200 employers representing Washington firms with from 5 to 5,000 employees completed the survey.

As with any sample survey, generalizations about the entire population of employers must be drawn with recognition of the potential for error inherent in both the survey and sampling process. See **Appendix D** for a discussion of some of the potential sources of error and the efforts made to maximize the ability to generalize from the results.

TABLE III
VOCATIONAL OUTCOMES DATA SOURCES

STUDENT DATA - 1987-88 COMPLETERS

ITEM	SOURCE	NUMBER	CRITERIA	COMMENTS
FOLLOW-UP FILE	SBCCE MIS (every year)	14,096	Vocational preparatory: Completed degree/ certificate OR left with 10 credits or more Valid social security number	Excludes Big Bend College (50 completers) 64 "duplicates" - completed at two colleges
PILOT STUDY OF MATCHES WITH ADMINISTRATIVE DATABASES	Follow-up file Match to ES Unemployment Insurance & SBCCE MIS/ four-year enrollments (every year)	14,096 9,387 (67%) Matches ES 423 (3%) Match education 4,286 (30%) Not matched	Social security match 9 months after completion	Pilot did not include matches with other states
STUDENT SATISFACTION MAIL AND PHONE SURVEY	Spring 1990 survey of representative sample from follow-up file (every two years)	955	Random sample of whites 100% sample for minorities 71% completion rate 20 months after completion	Program completers (degree/certificate) One year plus employed course completers Sample weighted to compensate for over-sampling of minorities

EMPLOYERS - 1990

SURVEY OF WASHINGTON STATE EMPLOYERS	Summer 1990 OFM joint-provider survey (every two years)	4,204 1,033 employed community college graduates	Sample survey of employers of five or more and fewer than 5,000 in June 1989 (54,180)	"Graduates" may not equate to completers Sample weighted to compensate for over-sampling new and expanding employers and government employers

Study Time Line

The Vocational Outcomes Research Review Group began the study design in the summer of 1989. Both surveys were designed and tested during the following fall and winter. Programming for the follow-up file and the match process occurred from winter 1990 through the summer.

SBCCE analyzed the data from all four sources and prepared draft reports during the summer of 1990. The Vocational Outcomes Research Review Group and the WACC Student Outcomes Task Force assisted in revision during September and October, 1990.

I. FINDINGS: DESCRIPTIVE CHARACTERISTICS

FINDINGS

Shedding Light On Myths

The study findings shed light on many of the myths that are held about vocational outcomes in Washington community colleges. Table IV summarizes the common misconceptions and the realities as identified by the study.

TABLE IV
Myths And Realities: Vocational Preparatory Completers

Myths	Realities
Mostly male	55% female
Young people looking for first job	Average age: 30
	Under 20 2% 20-22 19% 22-24 8% 25-29 17% 30-34 16% 35-39 11% 40-44 8% 45-49 5% 50+ 4%
	72% employed before college 4 in 10 were parents (similar to pattern of transfer students)
All novices in their field	26% employed in same or related field before college
Children of less well educated parents	21% have parents with bachelor's degrees (compares to 30 % of successful transfer students who had parents with bachelor's degrees)
Very few minorities	12% minority (similar to state population)
Very few non-native English speakers	12% speak English as their second language
Have equal opportunity in the job market regardless of race	Asians/Pacific Islanders, Hispanics and African Americans with equal education were nearly twice as likely to gain temporary employment
Career planning assistance is not required by adults	26% enrolled specifically to get help exploring a career direction

While women were the majority among vocational preparatory completers, they were not found in high numbers in all fields and some fields enroll mostly women. For example, two percent of the completers in auto mechanics were women. Secretarial science and dental program completers were 98 percent female.

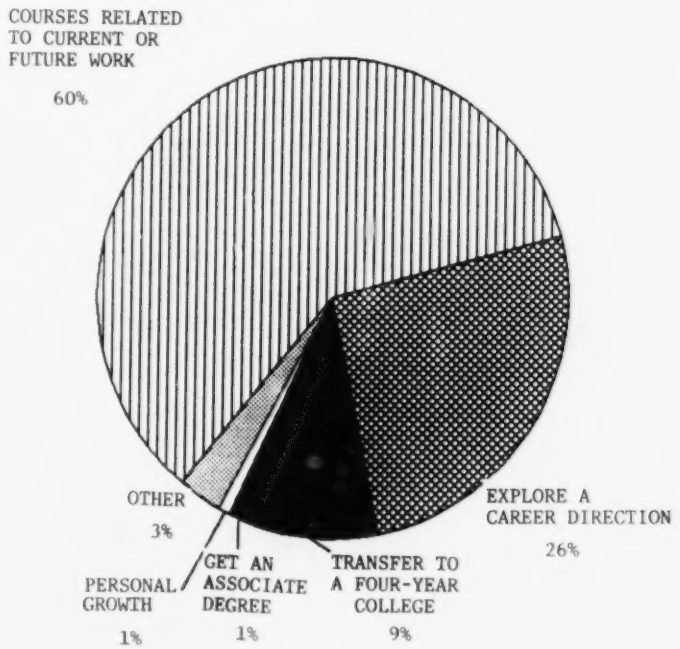
Are They All Really Vocational Preparatory Students?

Colleges identify which students are enrolled to prepare for a new job by assigning a Student Intent code of "F" to such students. Each college makes this assignment using the approach that works best. The study suggests that some students may have been mis-identified.

Non-vocational Goals: Six in ten vocational preparatory students saw their enrollment as directly related to current or future work. Some were enrolled to explore a career direction, rather than prepare for a specific job; that, too, is a vocational preparatory goal. Some enrolled for goals unrelated to vocational preparation: to prepare for transfer or to complete an associate degree as an end in itself, for example.

The reasons for enrolling were similar for men and women and for students of all race/ethnic groups. Regardless of the objective (degree, certificate or courses), the percentages for each goal were similar.

Graph IV
REASON FOR ENROLLING
1987-88 VOCATIONAL COMPLETERS
BASED ON STUDENT SATISFACTION SURVEY
(N=955)



Job Upgrading/Retraining: When asked about the relationship of their courses to their work objectives, 20 percent of the respondents said their courses would upgrade their current job skills. Another 28 percent said they were preparing for a career change. These were "traditional" vocational preparatory students -- novices preparing to take their place in the work force. About 26 percent of the respondents said they had been employed before college in a job that was related to their studies. Upgrading skills was a logical choice for these working students.

TABLE V
FACTORS INFLUENCING 1987-88 VOCATIONAL PREPARATORY COMPLETER'S PROGRAM CHOICE
BASED ON STUDENT SATISFACTION SURVEY
SPRING 1990

	Multiple Responses Allowed Percent Selecting (N=955)
Course and/or program quality	68%
Could get a job with only a short amount of training	39%
Cost of courses or program	37%
Conflict between classes and work or family commitments	35%
Availability of transportation to get to classes	20%
Other courses or programs of interest to me were full	18%
Not qualified for other courses or programs of interest to me	8%

Reasons Students Select Their Particular Program

The 1987-88 completers were most influenced in program selection by the quality of courses or programs as shown in Table V.

Employment Status of Students

Most employed vocational preparatory students remained employed (74 percent) while enrolled. Part-time workers were most likely to remain employed as shown in Table VI.

TABLE VI
CHANGE IN WORK STATUS OF 1987-88 VOCATIONAL PREPARATORY STUDENTS WHO WORKED BEFORE COLLEGE BASED ON STUDENT SATISFACTION SURVEY
SPRING 1990

	Before College Work Status		
Change During College	Full-time Workers (N=397)	Part-time Workers (N=289)	Total Workers (N=686)
Quit Employment	30%	20%	26%
Continued/Same Employer	47%	51%	48%
Fewer Hours	22%	21%	22%
Same or More Hours	25%	30%	26%
Different Employer	23%	29%	26%
Fewer Hours	16%	17%	16%
Same or More Hours	7%	12%	10%

Employers of Vocational Preparatory Completers

By Industry: Employers of vocational graduates were predominantly from the producer services, retail trades and non-profit (health and education services) sectors as shown in Table VII. The first column displays the percent of completers employed in the sector. The second column shows the percent of employers who hired from the community colleges. The percentages are different because several students may be employed by in the same firm. Each person counts once in the first column, but only persons in different firms count in the second column.

TABLE VII
EMPLOYER SECTOR, 1987-88 VOCATIONAL PREPARATORY COMPLETERS
BASED VOCATIONAL FOLLOW-UP FILE AND
WASHINGTON EMPLOYERS SURVEY

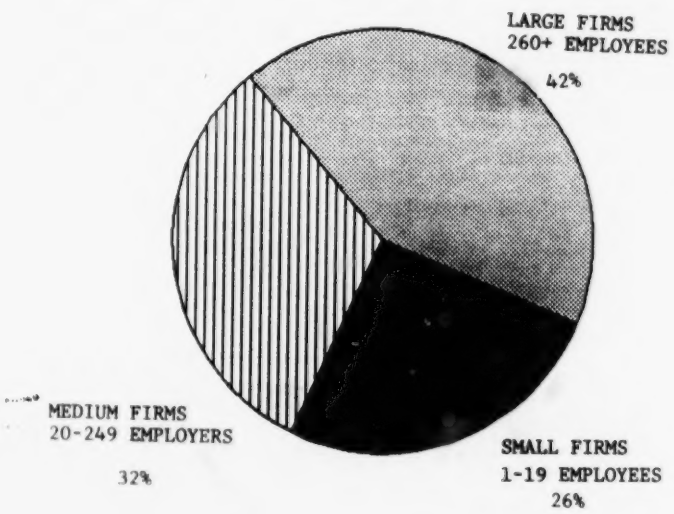
Sector	% of Students (N=14,096)	% of Employers (N=1,033)
Producer Services Finance, Insurance, Real Estate; Business, Legal, Social and Misc Services	18%	23%
Retail Trades	14%	21%
Non-Profit Health and Educational Services	32%	20%
Agriculture/Mining/Construction/ Forestry/ Manufacturing	19%	16%
Distributive Transportation, Utilities, Wholesale Trade	6%	12%
Consumer Services Hotels, Personal Services, Auto Repair and Services, Recreation	6%	7%
Government	5%	2%

Categories for industry sectors were developed by Bill Beyers, Northwest Policy Center, University of Washington.

Size of Firms: Completers were employed in both large and small firms with more students in firms employing 250 or more as shown in Graph IV.

Location of Firms: 25 percent of the completers were working for firms that operated statewide rather than in one county. The majority (53 percent) of completers were employed in Western Washington counties with 29 percent in King county, 6 percent in Snohomish, 6 percent in Pierce. Spokane county employed 10 percent of the completers.

Graph IV
EMPLOYED 1987-88 VOCATIONAL COMPLETERS
BY FIRM SIZE
BASED ON VOCATIONAL FOLLOW-UP FILE
(N=9,314)



Potential Action Issues

Sex Roles in Selected Fields: Despite considerable effort by college faculty and staff to increase the number of women and men in non-traditional fields, some fields of study continue to have a high proportion of men or women.

Further Research Issues

Further study of student intent is needed. This study suggests that student intents may be mis-identified in two areas:

* Transfer students: Those taking vocational programs and planning to transfer. (Currently colleges code some transfer students as having a vocational preparatory intent rather than a transfer intent.)

* Upgrading students: Those already employed in a field related to their training. (Currently some are coded as having a vocational preparatory rather than a job upgrading -- vocational supplemental -- intent.)

Changes in coding may be required.

II. FINDINGS: EDUCATIONAL ACHIEVEMENT

Findings

Completion Type: About one third of the 1987-88 vocational preparatory completers left the college with a degree. Degree programs require greater development of adaptive skills and advanced technical skills than do certificate programs. Degree attainment was higher for the sample as a whole than for men, GED starters, single parents, African Americans, Hispanics, and Native Americans.

* 17 percent of African American vocational completers, 18 percent of Native American and 26 percent of Hispanic completers stayed at the college to complete the degree.

TABLE VIII
Percent Of 1987-88 Vocational Preparatory Completers by Race and Ethnic Background and Type of Completion Based on Vocational Preparatory Follow-Up File

Completion Type	White (N=11,003)	Asian (N=701)	African American (N=399)	Native American (N=298)	Hispanic (N=244)
Program Completers					
Degree Completers	33%	27%	17%	18%	26%
Certificates	17%	23%	14%	14%	15%
Course Completers					
1 Year Plus Course Completers	13%	12%	19%	12%	10%
Less than 1 Year Course Completers	37%	38%	51%	55%	48%

* Men were slightly less likely than women to complete a degree (30 percent vs 33 percent).

* 24 percent of GED starters (those who entered community colleges with a GED rather than a high school diploma) received the degree.

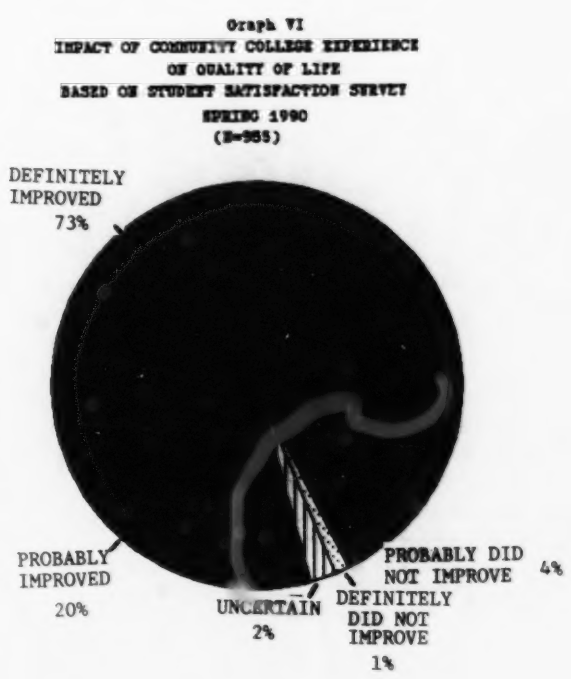
* 25 percent of single parent vocational completers received the degree.

Meeting Educational Objective: Survey respondents were asked if they met their educational objective while enrolled. Most did (97 percent) and said the college had a role in their meeting that objective. See Table IX.

TABLE IX
DEGREE TO WHICH 1987-88 VOCATIONAL PREPARATORY COMPLETERS MET THEIR OBJECTIVE BASED ON STUDENT SATISFACTION SURVEY SPRING 1990

	Respondents (N=977)
Met Completely	66%
Partially Met	31%
Changed	>1%
Not Sure	1%
Did Not Meet	2%
Did community college experience help meet?	
Yes	91%
No	5%
Uncertain	4%

Improved Quality of Life Through Education: Survey respondents were asked if their experience at the community college had improved the quality of their life - a measure of educational achievement. Most (93 percent) said that college had improved the quality of their life as shown in Graph VI.



Education as an Outcome: About 3 percent of vocational preparatory students continued their education rather than seeking a job after completing their vocational study. In the 1987-88 class, 172 students continued at a community college, 191 at a four-year institution, and 40 at a vocational technical institute.

Those who transferred to four-year institutions (191) attended all three types of institution: public regional universities and colleges, 54 percent; public research universities, 30 percent; and independent colleges, 16 percent.

Preparing for Life-Long Learning: Vocational preparatory completers can expect to be in a job environment which will require additional learning - including additional formal training at a college. At the time of the student satisfaction survey, 20 months after leaving the vocational program, three percent of completers were enrolled in college but not working. An additional 12 percent were working and taking college classes. Compared to the average total college attendance, 15 percent of the completers, those who left with certificates and those for whom English is a second language, were more likely to be in further post-secondary training (21 and 23 percent respectively).

Those who continued their education tended to be younger, female completers (29.8 years of age compared to 31.8 for others; 67 percent were female).

In addition to the 15 percent of completers attending college at the time of the survey (20 months after course or program completion), another 29 percent said they planned to do so within the next year.

Potential Action Issues

The sample on the average achieved higher levels of education than did single parents, GED starters, Hispanics, Native Americans and African Americans.

Minority Retention: The retention rates in community colleges for Asian Americans, Pacific Islanders and Whites tended to be higher than they were for African Americans, Native Americans and Hispanics. While retention rates have been improving for all groups and colleges have directed special attention to minority retention, this study suggests that still more effort will be required to achieve equal education for all.

Single Parent's Needs: Many single parents are low-income women, a group that has been shown to have low educational achievement at the secondary school level (See **Washington State's Family Income Study: Results from the First Year**). Lower public school attainment coupled with the demands of parenting without a partner, probably contribute to lower educational achievement among single parents.

GED Starters: About seven percent of vocational preparatory completers entered their community college with a GED and no additional education. These completers, called GED starters, had lower educational achievement and were less likely to show evidence of being life-long learners (enrolled or with plans to enroll in upgrading courses). Previous studies have questioned the value of the GED for those seeking employment. This study shows that even with training at the community college those who started with the GED achieved less educationally than those who started with a high school diploma. (Analysis was based on a comparison with those who had completed no more than a high school diploma.)

Which students were likely to enter vocational preparatory programs with a GED? The characteristics which distinguished GED starters were:

* Native Americans were about twice as likely to be GED starters than any other group. About 42 percent of Native American starters with education below the college level had a GED.
* GED starters were older (average age at last enrollment was 34).
* GED starters were more likely to be parents (single parents: GED, 28 percent, high school diploma, 12 percent; other parents: GED 31 percent, high school diploma, 20 percent).

III. FINDINGS: EMPLOYMENT OUTCOMES

FINDINGS

Employment: According to the match with the unemployment files and the student survey, most completers who sought jobs were able to obtain them within nine months after leaving the college. Table X represents what is known about 70 percent of the students, based on the data matches, with estimates for the rest, based on the satisfaction survey.

Unemployment: About three percent of all completers and four percent of those who sought jobs said they were unemployed and seeking work. GED starters, "career direction" completers, and African Americans were about twice as likely as others to be unemployed and seeking work.

TABLE X
EMPLOYMENT AND OTHER OUTCOMES
1987-88 VOCATIONAL PREPARATORY COMPLETERS

Employed	12,400	88%
Full-time	9,585	68%
Part-time	1,830	13%
Self Employed	985	7%
Not Employed	1,696	12%
Seeking work	424	3%
Continuing Education	410	3%
Homemaker	300	2%
Retired, military, disabled, other	562	4%
Total Vocational Preparatory Completers	14,096	100%

Despite their lack of current employment, most of the three percent unemployed were as positive about the college as others. These unemployed completers were, however, slightly less satisfied with the "usefulness or relevance of training to current job" (3.6 on a 5 point scale compared to 4.1 for others) and "role of the community college courses in increasing your job opportunities" (3.8 versus 4.2). (See Section IV for details on satisfaction ratings of all completers surveyed.)

Employment alone is not a sufficient measure of successful outcomes. Some completers may have taken jobs below their skill level or with limited job security. About 97 percent of Native Americans were employed, but 25 percent were in jobs that were not related to their training. About 91 percent of Asian American and Pacific Islander completers were employed, but 30 percent were in temporary jobs, the highest rate for any group.

The study measured employment outcomes at two levels - first, the percent of completers in jobs related to their training; and second, a group of position related measures: job security and reward. Reward was measured in terms of both increased pay level and whether the position used the completer's skills.

In addition, the student satisfaction survey results distinguished between those who sought jobs when they left the college and those who chose to continue their education, homemaking or other activities. Study findings related to employment outcomes based on the survey results are reported only for the 91 percent who were classified as "job seekers."

Job Seekers Versus Others

About 91 percent of the survey respondents are classified as job seekers. That is, they either had a job upon completion (including returning to or retraining for their former job) or they engaged in a job hunt. Half of the remaining nine percent continued their education and the rest retired, became homemakers, or for some other reason, such as continuing on disability benefits, did not pursue employment.

Jobs Related to Training

About 85 percent of the student satisfaction survey respondents said they were in jobs related to their training. The match with the unemployment insurance files showed that 82 percent of completers were in industries with jobs related to training. The small difference in numbers can be accounted for by the differences in populations for the two data sources and differences in methods of defining jobs related to training. The actual job-related-to-training figure is likely somewhere between 82 and 85 percent.

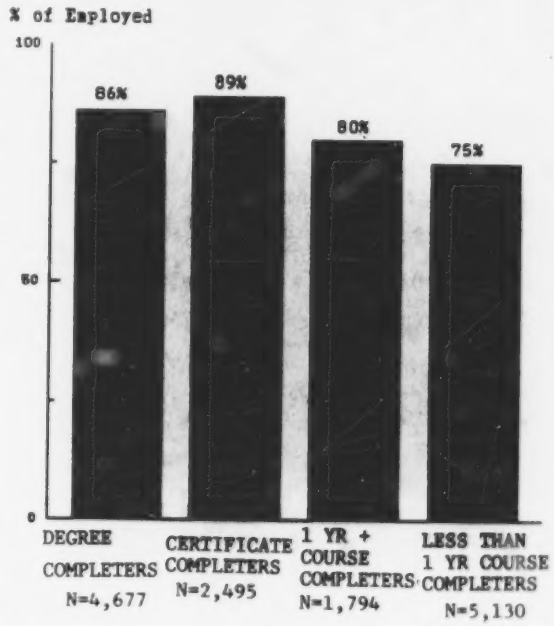
The data match provides useful comparisons of the percentage of completers in industries related to training by completion type and field of study.

Completion Type: According to the data match, completers with certificates were most likely to be in jobs related to their training followed by degree completers as shown in Graph VII. Findings from the student satisfaction survey suggest that some certificate completers in industries related to their training were in jobs unrelated to training. Survey respondents who had completed certificates were significantly less likely to say they were in jobs related to their training than degree respondents (82 percent versus 86 percent for degree completers). Course completers were least likely to be in jobs related to training.

Graph VII

EMPLOYMENT RELATED TO TRAINING BY COMPLETION TYPE

1987-88 VOCATIONAL PREPARATORY COMPLETERS



College Major: As Table XI shows, the percentage of completers in industries related to their training varies significantly by major. Employed completers majoring in personal services (cosmetology), and agriculture and renewable resources were least likely to be in industries related to their training.

TABLE XI
EMPLOYMENT RELATED TO TRAINING BY PROGRAM AREA
1987-88 VOCATIONAL PREPARATORY COMPLETERS
BASED ON MATCH WITH UNEMPLOYMENT INSURANCE FILES

Program Area	% Employed Related to Training
Accounting/Bookkeeping	97%
Agriculture and Renewable Resources	56%
Business Management	96%
Data Processing	89%
Early Childhood Education	66%
Electronics and Electrical	67%
Engineering and Related	74%
Graphics and Commercial Arts	65%
Hospitality and Recreation	89%
Marketing and Sales	91%
Medical Related	90%
Mechanics and Related	84%
Manufacturing/Machinist/Welding	72%
Office Occupations	86%
Personal Services	47%
Public Service	62%
Transportation Services	63%
Other	61%
Total	82%

Position: Relation to Training, Job Security, Level, and Reward

The student satisfaction survey provided more detail on employment outcomes than was available from the data match. These findings helped to identify students who had less positive employment outcomes than average.

Jobs Related to Training: The survey asked respondents if they saw their job (not industry as in the data match) as related to their training. About 15 percent of job seeking respondents said their jobs were unrelated to their training. African American and Hispanic job seeking completers were more likely than others to say their jobs were unrelated to training (see Table XII). Others more likely than the average respondent to be in jobs unrelated to their training were GED starters, those for whom English is a second language, completers with disabilities, and "career direction" completers (those who enrolled to explore a career direction).

A solid majority (80 percent) of the 15 percent in jobs unrelated to their training said they had met their objective while at the college. They also gave the college generally high satisfaction ratings. They were more dissatisfied than others with the effort to make "known job openings" and with the "role of the college in increasing job opportunities" (see the next section of the report for details on the satisfaction measures).

About one percent of all student satisfaction survey respondents where in jobs unrelated to training, said they definitely had not achieved their objective, but had very positive employment outcomes in terms of being in permanent full-time positions with earnings increases. It is presumed that personal interests such as working in a family business or keeping a job they had before college explains their employment in unrelated jobs.

Another one percent of completers had not achieved their objective, where in jobs unrelated to training and had less positive employment outcomes. Those respondents were more likely to be from community colleges in high unemployment areas.

Job Security, Level and Reward: Demographic characteristics, college majors, and levels of completion were related to the likelihood that completers would be in permanent jobs which fully used their skills and resulted in increased earnings. Table XII shows the differences on each variable for the completers who had somewhat poorer employment outcomes than average.

TABLE XII
PERCENT OF JOB SEEKING COMPLETERS BY EMPLOYMENT OUTCOME
AND TYPE OF COMPLETER
BASED ON STUDENT SATISFACTION SURVEY
SPRING 1990

Type of Completer	Job Not Related to Training	Temporary Job	Job Below Level	Decline in Earnings	Unemployed
Total (N=867)	15%	17%	18%	8%	4%
Certificate Completers (N=283)	18%	18%	21%	13%	5%
Asian American (N=187)	18%	31%	29%	7%	3%
African American (N=75)	26%	28%	18%	16%	8%
Hispanic (N=51)	25%	30%	26%	6%	4%
ESL (N=161)	22%	19%	20%	11%	6%
Single Parents (N=95)	19%	28%	25%	3%	4%
Disabled (N= 60)	24%	19%	20%	8%	5%
GED Starters (N=64)	28%	36%	25%	13%	8%
"Career Direction" (N=208) Reason for Enrolling	23%	21%	23%	13%	7%
Office & Accounting (N=144) Majors	23%	27%	26%	13%	8%
Business Management (N=49) Majors	16%	25%	21%	7%	2%

N = Number of Job Seeking Completers in each category

Potential Action Issues

Less Employment Success for Some Completers: Those who had less success in employment outcomes were vocational preparatory completers who were:

* Speakers of English as a second language.
* Single parents.
* Disabled.
* GED starters.
* Enrolled to explore a career direction.
* Asian American and Pacific Islanders, African American, and Hispanic.

Employment outcomes also differed by level of completion and college major. The higher the educational achievement (degrees versus certificates), the more positive the employment outcome. As a group, office and accounting (especially bookkeeping) majors and business management majors had poorer employment outcomes than completers in other fields.

Further Research Issues

Reason Not Employed Related to Training: The satisfaction survey did not ask respondents why they were employed in jobs unrelated to their training. Future surveys should address that issue.

Temporary Work as Norm: This study treats employment in a temporary position as a poorer outcome than a permanent position. Economic forecasts suggest that contingent hiring (temporary/provisional positions) will grow. Future research may need to distinguish between temporary employment as a stop-gap for the under- or unemployed and temporary employment as a regular mode of employment.

Multiple Employers: About 16 percent of the 1987-88 completers worked for more than one employer during the three month period that was matched with the unemployment insurance files. Whether that employment was sequential or simultaneous is unknown. The student satisfaction survey was designed on the assumption of a single employer. Richer methods of data collection may be needed to learn more about the multiple employer phenomena.

Multi-Year Average of Employment Outcomes: Employment outcomes for a single year may simply reflect the economy rather than the quality of training. A multi-year average for both employment and employment related to training would provide a more accurate picture of which majors need changes to meet the labor market needs. Given the high quality of the unemployment insurance match for this type of analysis, such a multi-year analysis can be developed.

IV. FINDINGS: EMPLOYER AND COMPLETER SATISFACTION

FINDINGS

Satisfaction of Washington Employers with Student's Preparation

The survey of Washington employers conducted by the Office of Financial Management asked employers of community college graduates to rank their satisfaction with the graduate's skills. About 29 percent of the survey respondents (1,033 employers) said they had hired enough graduates from community colleges to provide a fair evaluation of the performance of these employees. Others had not hired community college graduates or did not feel qualified to evaluate their performance. That a majority of employers in Washington have not recently hired community college graduates is not surprising given the large number of small firms that hire only high school educated workers.

While the survey asked employers to evaluate graduates from vocational training programs, it did not specifically request an evaluation of vocational preparatory completers. Thus the employers may have evaluated both transfer and general education degree holders as well as vocational preparatory completers.

Ratings: About 87 percent of the employers familiar with community college graduates said they were satisfied with the work performance of former students hired in the past three years (see Table XIII).

TABLE XIII
EMPLOYER SATISFACTION WITH THE PERFORMANCE OF GRADUATES
SURVEY OF WASHINGTON STATE EMPLOYERS
SUMMER 1990

1 = Very Unsatisfied
2 = Somewhat Unsatisfied
3 = Somewhat Satisfied
4 = Very Satisfied

	Mean	% Very or Somewhat Satisfied (N=1,033)
How satisfied with ...		
Work performance	3.1	87%
Quality of work	3.0	81%
Productivity	3.0	77%
Enthusiasm for work	3.0	76%
How satisfied with specific job skills?		
Related directly to the job	2.9	74%
Computer skills and knowledge	2.8	71%
Science skills	2.8	73%
How satisfied with adaptive skills?		
(Basic)		
Speaking effectively	3.1	88%
Writing effectively	2.8	70%
Spelling correctly	2.7	63%
Math skills	2.8	72%
(Critical Thinking)		
Reasoning and problem solving ability	2.8	70%
Ability to adapt to changes in job	2.9	76%
Ability to make judgements	2.9	72%
Ability to prioritize work	2.9	66%
(Human Relations)		
Ability to work with others	3.1	85%
How satisfied with work orientation		
Positive work habits and attitudes	3.0	76%
Ability to follow written directions	3.0	82%
Ability to follow oral directions	3.0	78%
Appropriate appearance and manner	3.1	84%
General office automation skills	2.9	77%
Acceptance of supervision	3.0	80%

Note: Survey rankings used 1 as very satisfied and 4 as very unsatisfied. Scores have been reversed for readability.

Using the same scale, these same employers gave their total work force a mean rating 2.7 on communication skills, 2.6 on reasoning and problem solving skills, 2.7 for ability to work with others, work habits and following directions. Employers, in other words, rated community college graduates more positively than their total work force.

Student Satisfaction

General: Two measures of general satisfaction with community colleges were studies: (1) the degree to which completers would attend the community college, if they had it to do over again, and (2) whether completers would recommend their college to a friend. About 89 percent of survey respondents said they would attend the college again and 93 percent would recommend it to a friend. The satisfaction level varied by race/ethnic background as shown in Table XIV. The difference may, in part, be attributable to culture-based differences in approaches to answering such questions. On the more specific satisfaction questions in the survey, Asian and Pacific Island students were less positive than any other group.

TABLE XIV
GENERAL MEASURES OF 1987-88 COMPLETERS VOCATIONAL PREPARATORY SATISFACTION BY RACE/ETHNIC GROUP BASED ON STUDENT SATISFACTION SURVEY SPRING 1990

	ALL (N=955)	WHITE (N=536)	ASIAN/ PACIFIC ISLAND (N=208)	AFRICAN AMERICAN (N=82)	NATIVE AMERICAN (N=60)	HISPANIC (N=59)
Knowing what you know now, would you attend community college?						
Yes	89%	90%	83%	89%	95%	83%
No	6%	6%	8%	10%	2%	9%
Uncertain	5%	4%	10%	1%	3%	9%
Would you recommend the community college to a friend?						
Yes	93%	94%	86%	91%	98%	92%
No	3%	2%	2%	7%	2%	5%
Uncertain	4%	4%	12%	1%	-	3%

Ratings: Completers were asked to evaluate their college experience on 25 variables. The results for all respondents are summarized in Table XV.

TABLE XV
SATISFACTION OF 1987-88 VOCATIONAL PREPARATORY STUDENTS
BASED ON STUDENT SATISFACTION MAIL AND PHONE SURVEY
SPRING 1990

1 = Not at All Satisfied
5 = Very Satisfied

	Mean (N=955)	% Rating 4 or 5
Instruction/Faculty		
Quality of Instruction	4.1	77%
Quality of Courses	4.1	81%
Practical Experience Offered	4.0	70%
Interaction with Faculty	3.8	65%
Courses		
Variety of Courses	4.0	73%
Availability at Times Needed	4.0	71%
Support Services		
Help in Selecting Courses (Advising)	3.8	61%
Information on Conducting Job Search	3.6	55%
Resume Writing and Interviewing Skills	3.7	60%
Posting Jobs	3.7	60%
Childcare Services (5%)	4.2	71%
Disabled Students Services (3%)	3.8	65%
Veteran Services (10%)	4.3	79%
Minority Student Services (2%)	4.1	75%
Women's Center (6%)	4.3	86%
Financial Aid (39%)	4.2	74%
Contribution of College to Development		
Learning Independently	4.2	80%
Working Cooperatively in Groups	4.2	80%
Recognizing Citizenship Rights (76%)	3.8	62%
Understanding Differing Philosophies and Cultures (72%)	3.7	56%
Defining and solving Problems	4.0	75%
Understanding the Interaction of Society and Environment (76%)	3.7	58%
General		
Usefulness or Relevance of Training to Job	4.1	78%
Role in Increasing Job Opportunities	4.1	77%
Access to Up-to-date Equipment	3.8	64%

Note: Percentages in () mean percent responding.

Potential Action Issues

Adaptive Skills: Nearly four in ten employers (37 percent) willing to evaluate community college graduates were dissatisfied with one or more of the graduates' adaptive skills: writing, spelling, math, reasoning and prioritization skills of those graduates. Employers more likely to be dissatisfied were those from the distributive (43 percent), producer services (41 percent), and the consumer services sectors (41 percent). Employers in lumber-dependent Eastern Washington counties (including Spokane) were slightly more likely to be dissatisfied with adaptive skills than others.

The following statement from one employer was typical of the many comments made by those who were dissatisfied with adaptive skills:

> Our company would like to see the community colleges concentrate on teaching the practical managerial skills: problem-solving, coaching, decision-making, delegation. These skills would help any graduate perform w nderfully in any field! Let's teach these kids (sic) how to think!

Colleges may need to evaluate the adaptive skill training offered in business, office, marketing, hospitality, para-legal, and repair programs as these graduates are the most likely to be hired by the distributive, producer and consumer services sectors.

Job Search Skills: Vocational preparatory completers were least satisfied with their community college education regarding information on conducting a job search. About 18 percent of completers rated the college a "1" or "2" on a 5 point scale.

It is possible that colleges have not been able to give as much emphasis to helping students with their job search as is needed to satisfy all students.

Work Habits: Nearly one in four employers in a position to evaluate community college graduates were dissatisfied with the work habits and attitudes of those graduates. About 4 percent, or 35 employers, were very dissatisfied with graduates' work habits and attitudes. While employer dissatisfaction was not especially high, the dissatisfaction represents a concern. Community colleges have set standards to include work habits and attitude training in the vocational curriculum. More positive evaluations from employers had been expected.

Neither size nor l cation of the employer were related to dissatisfaction, but those in the retail sector were most likely to be dissatisfied (32 percent).

Employer comments suggest that the work habit problem was most typical among young workers. This employer's comment was typical:

> Our biggest problem with new hires in the past three years has been a poor attitude, work ethic and attendance of the workers under age 21 years. In addition, their expectation in increases in pay and benefits is not diminished by their poor performance. . . How can you teach hard work and dedication? Is this just a phase that this age group work force is going through?

Interaction with Faculty Outside Class: About 11 percent of vocational completers were dissatisfied with their opportunity to interact with the faculty outside the classroom. While the amount of dissatisfaction was minimal, concern is merited. Studies have shown that a positive relationship with someone at the campus, preferably a faculty member, is a predictor of both retention and learning. Dissatisfaction, even if minimal, about interaction with faculty outside class is consequently an important issue.

Further Research Issues

Career Planning Assistance: About 26 percent of vocational preparatory completers enrolled to get help with exploring a career direction. These "career direction" completers were twice as unlikely to have met their goal while students. It is possible that colleges are not providing enough career planning assistance for the one in four students seeking such help.

In a recent survey of completers from vocational technical institutions, 48 percent said that more career and job counseling was needed. The community college student satisfaction survey did not include such a question. Additional research is needed to determine if a substantial number of community college students also need more career and job counseling.

Life Long Learning: The survey failed to include a question that would assess the degree to which completers were prepared for continually upgrading their skills for the ever-changing work force. Future surveys should include assessment of the awareness that learning is a life-long activity.

Understanding Employee Rights and Responsibilities: The student satisfaction survey did not address questions to the issue of understanding employee rights and responsibilities. Future surveys should address this area.

CONCLUSIONS

Washington employers and community college vocational preparatory completers both evaluate the quality of Washington community college preparation very positively. Former students gave especially positive ratings to the quality of instruction, the practical experience offered in courses, course variety and advising. Most former students would pursue the community college route if they had it to do over again and most would recommend the college to their friends.

Employers were most positive about community college graduate's general performance on the job, appropriate appearance and manner, speaking skill, quality of work, productivity, and enthusiasm for work.

Former students are very successful at attaining employment related to their training. Furthermore, they generally find permanent jobs which use their skills.

Even though the quality of vocational preparation in community colleges is very high, there is room for improvement. Some groups of students did not share the overall positive ratings. Others were positive about the quality, but were less successful in meeting education and employment goals. About four in ten employers were dissatisfied with the adaptive skills possessed by community college graduates. These findings have generated potential action issues which the community college system will be addressing in the next six months.

APPENDIX A

VOCATIONAL PREPARATORY FOLLOW-UP FILE

The State Board for Community College Education's (SBCCE) vocational preparatory follow-up file contains student information including social security numbers and demographics for all students identified as "completers" for a given academic year. It is the base file for both the matches with other agencies and for the student satisfaction survey.

Source of File

The file data came initially from the automated transcript records maintained by each college. While the Washington community college system has no single transcript file - each college maintains its own, all colleges use identical computer programs for storing student enrollment and transcript data. These programs have been developed by the Washington Community College Computing Consortium (WCCCC). The WCCCC was able to create a single computer program to pull information from the 27 college files. (During the year used for the pilot study, Big Bend Community College did not participate. As a consequence, about 50 students are missing from the 1987-88 follow-up file. Big Bend will be included in future years' files.)

"COMPLETERS"

All vocational preparatory students who leave the college after completing 10 or more vocational credits are considered "completers."

There are two types of completers: program and course completers. Each type is further divided into two categories:

PROGRAM COMPLETERS

- degree completers
- certificate completers

COURSE COMPLETERS

- attending 1 year or more
- attending less than one year

The transcript file was used to identify whether the student met the minimum qualifications to be included in the follow-up study and to distinguish between types of completers.

Those selected from the transcript files were then matched with the SBCCE Student Management Information File (SMIS) to yield demographic information. The SMIS is a summary database that serves as an end-of-the-quarter snapshot of the individual college records. It is the single source of demographic information on the community college system.

Selecting Completers for the File

The characteristics of those selected by SBCCE for the follow-up file were:

* Those who completed a vocational certificate or degree at a college in a given academic year, regardless of whether they re-enrolled in the college after completion (called "program completers").

* Those without degrees or certificates who left the college in a given academic year and had not returned to that same college since leaving (called "course completers"), provided:
    * In the quarter before leaving the college, the student had been assigned a student intent code of "vocational preparatory" ("F" Student Intent), and
    * The student had completed at least 10 credits in vocational courses, before leaving the college.

Additionally, only students with valid social security numbers were included in the file.

The "vocational preparatory" criteria were developed to meet the goal of this year's study of vocational outcomes - to study those who planned to prepare for a new vocational field. Essentially this is a file of vocational "majors". Students with a job upgrading or retraining objective will be studied using a different method in 1990-91. No plans currently exist to study the outcomes of apprenticeship or parent education students.

The initial follow-up file also contained academic students with majors which the computer program translated as vocational. These were later excluded and the program changed to assure academic students would not be selected in the future.

SBCCE limited the file to completers with valid social security numbers because only those completers could be matched with other agencies. Six hundred and thirty-three students were eliminated from the file for lack of social security numbers (carried "dummy" numbers in that field). Most of those eliminated were enrolled in programs sponsored by the Department of Corrections. By agreement with that agency, SBCCE cannot include such students in outcomes assessments. A record keeping change at Shoreline Community College resulted in some of the other "dummy" social security numbers. Other "dummy" numbers were students who preferred not to use their social security number.

About 37 percent of the students with an "F" intent who left in 1987-88 did so before completing 10 vocational credits. A review of the records shows that many of these students should never have been coded with an "F" intent. They enrolled in one or two courses typically taken for job upgrading or retraining rather than majoring in vocational programs.

A subset of those excluded because they completed too few credits no doubt were "drop-outs" who actually intended to complete a vocational program but were unable to do so.

VOCATIONAL PREPARATORY STUDENTS WHO LEFT THE COMMUNITY COLLEGES IN 1987-88

Total Leaving	23,208
No social security numbers	636
Completed less than 10 credits (miscoded & dropouts)	8,476
Course Completers	
Less than one year	5,130
One or more years	1,794
Program Completers	
Certificate	2,495
Degree	4,677
Total Completers	14,096

This study assumes that many of the 8,476 were called vocational preparatory by the college but should have been considered job upgrading or retraining and thus included in a different outcomes assessment process. Currently, no summary information is available about this group. SBCCE plans to study these students at some future date.

Duplicate Counts

Completers who left more than one community college during a year appear on the file for each college they attended. For the 1987-88 follow-up file, 64 completers, or 0.5 percent of the total 14,096 completers were listed twice in the file. Program completers with more than one degree or certificate awarded in a single year appear on the follow-up file only once.

Information Included in the Follow-up File

In addition to the student's social security number and code for the college they attended, the file included the following data elements:

Ethnic Origin: Asian, Pacific Islander, African American, Native American, Hispanic, White, and Unknown. (Note that beginning with the class of 1992-93 the file will contain separate race and Hispanic codes to mirror the census categories.)

Sex: Male, Female and Not Reported.

Student's Age: Age as of the first day of the last quarter they attended. Age is reported to two decimal places reflecting the day and month of birth as well as the year. For example, 29.25 is the age of a person who was twenty-nine in April of 1988.

Program CIP: Code for the subject area of the student's major. CIP stands for Classification of Instructional Programs, a national standard for classifying fields of study used in secondary and post-secondary education.

Handicap Status: Y means a disabled student who needed assistance from the college to complete studies.

Limited English Proficiency Indicator: Y means the student has taken an English-as-a-Second Language course or has been coded by the college as having limited English proficiency.

Academic Disadvantaged Indicator: Y means the student has taken a basic skills or developmental course.

Economic Disadvantaged Indicator: Y means the student received need-based financial assistance during some fall quarter. (Note: Students who fail to enroll in fall quarter will not have a Y code even if they received aid.)

ZIP Code: The zip code of the student's address while last enrolled.

Time/Location Code and Indicator: Tells if the student primarily took courses on campus or off, day or evening, during the last quarter of enrollment. Also tells all the different combinations in which the student took courses. The code categorizes the student as being either day or evening, on or off campus. The Indicator shows all the times or locations for which the student enrolled.

Fund Source Code and Indicator: Tells if the student enrolled in state-contract or student-funded courses during the last quarter of enrollment. The code categorizes the student as either state-, contract-, or student-funded. The indicator shows all the fund sources in which the student was enrolled.

Institutional Intent Category Indicator: Tells if the student took exclusively vocational courses, or vocational-with-academic or basic skills/developmental courses during the last quarter of enrollment.

Quarter and Year Student Started: Indicates when student started at this college. Does not include start at any other community college or institution.

Quarter and Year Last Enrolled: Indicates when students last enrolled at this college. For most, the last quarter was spring 1988. Includes quarters after 1987-88 for those who continued their enrollment.

Exit Status: Type of completer. The certificate completers are further divided into 1 and 2 year certificate holders and less than one year certificates.

Starting with the class of 1990-91, the follow-up file will also contain information on the student's prior education level, work and family status while enrolled, and planned length of attendance.

APPENDIX B

PILOT STUDY: USING OTHER AGENCY DATABASES TO IDENTIFY THE EMPLOYMENT AND EDUCATIONAL OUTCOMES OF VOCATIONAL PREPARATORY COMPLETERS SPRING AND SUMMER 1990

The State Board for Community College Education (SBCCE) designed a new procedure to gather employment and education outcomes as a replacement for the expensive and time-consuming process formerly used for surveying students. In the past each college has conducted a mail or telephone survey of all vocational preparatory students who received degrees and certificates and those who left the college without a formal award but had employable skills. That survey provided colleges with assessment information and it also met the need for labor supply information for the Labor and Economic Analysis Branch of Employment Security and for accountability information for the State Board for Vocational Education.

In 1990, SBCCE conducted a pilot study to test the effectiveness of using the administrative data files maintained by other agencies to provide information on the employment and education outcomes of vocational preparatory completers as an alternative to the survey process. The files used for this purpose were those maintained by the Department of Employment Security (ES) for the purposes of the unemployment insurance and unemployment benefits system and those maintained by the Office of Financial Management (OFM) containing records of students enrolled at four-year public and private institutions.

The pilot study's goal was to determine if Washington community colleges could substitute the data matches for the survey process and, if so, how to do that most effectively. Several other states have had success using unemployment insurance files for similar purposes. Among them are Florida, Arizona, Illinois and Oregon. Studies are underway to determine if this approach could become the national standard for vocational placement information. In addition to using the data match to replace the survey process, the pilot study also was used to determine if the same data could provide the placement information required by the federal government in response to the student loan default problems.

A group representing the community colleges and Employment Security assisted SBCCE with the pilot study. The members of this Vocational Outcomes Research Review Group are in Appendix F.

This summary of the results of the pilot study is in five parts:

* Interagency cooperation
* Process of unemployment insurance (ES) match
* Strengths and weaknesses of the ES match
* Process of education and military matches
* Strengths and weaknesses of the education match

Interagency Cooperation

Unlike the survey process which relies on cooperation from vocational completers, the data match process relies on cooperation between agencies and higher education institutions.

SBCCE entered into an agreement with the Employment Security Department to conduct the pilot study for use of the ES data. Since individual firms were not identified, no special confidentiality agreements were required.

SBCCE contracted ES staff to program the matching process. That process is now available as a standard computer procedure for SBCCE use or use by other agencies. As ES data collection changes, ES will maintain the SBCCE procedure, at SBCCE expense. The primary expense of this process was for initial programming. ES will charge SBCCE for the data processing time each year.

All of the higher education institutions which provide data for the on-going applications-match database maintained by the Office of Financial Management agreed to allow use of that database for the SBCCE pilot study. OFM agreed to match the tapes at no cost to SBCCE. Colleges included in the match were:

Independent Institutions	Public Institutions
City University	Central Washington University
Gonzaga University	Eastern Washington University
Pacific Lutheran University	The Evergreen State College
Seattle Pacific University	University of Washington
Seattle University	Washington State University
University of Puget Sound	Western Washington University

Process of Unemployment Insurance Match

The 14,096 1987-88 vocational completers were matched against two Employment Security Department databases:

* Unemployment Insurance Wage Records. This file is based on data sent to ES on a quarterly basis by most Washington employers. The data identify the employee, provide their quarterly wage, and in most cases, their quarterly hours worked. Information is also available on the firm: size, industry category and county of operation of the employer. Confidential information which would identify an employer is not included in the match process.

* Unemployment Insurance Benefit History. This file includes all who were recipients of unemployment benefits in a given time period. Note: This is not the same as the total unemployment. The unemployed include both those receiving benefits and an estimate of the unemployed not receiving benefits.

For the pilot study, the vocational completers were matched only against these two files. In future years, the ES will request that completers not matched on either file also be matched against identical files for Oregon, Idaho, Alaska and California. Cooperation from other states depends on the priority they give to this task. In future years, the ES will also match against federal military files.

The match was for the employment quarter about nine months after completion of the vocational courses or program. For this pilot study, the 1987-88 students were matched against the files for January to March, 1989. SBCCE selected the winter quarter because the records for the first quarter of the year are least likely to contain inflated salary figures due to year-end bonuses. That quarter also captures employment status nine months after most completers left the college (June of the prior year). Most completers would have passed the probationary period at any new job.

The match provided SBCCE with the following information:

Work-Force Status:
1: Employed: Match to ES wage record files or other state files
2: Unemployed: Match to ES benefits files
3: Not Matched: Not matched in the Washington, Oregon, Idaho, Alaska or California files

Standard Industrial Code (SIC):
Three digit indictor of the type of industry of employing firm

Employment Location:
County or state code for location of main office of employing firm

Employment Related to Education Indicator:
1: SIC of firm matches CIP (Classification of Instructional Program code) of completer's major
2: SIC of firm does not match CIP

Estimated Annual Salary:
An hourly rate is calculated and multiplied times 2,080

Quarterly Hours:
Hours employed during the quarter

Business size:
One of ten categories based on number of employees in firm

Upgrade Retraining Indicator:
1: Completer worked for the same firm before, during and after training
2: Completer worked for the same industry (3 digit level) before, during and after training
3: Completer started college before ES on-line files were available

Multiple Firms Problem: About 16 percent of the 1987-88 completers had two or more employers during the match quarter. The ES database does not identify whether that employment was simultaneous or sequential. For each completer only one SIC and location could be identified, so a protocol was developed to select a single firm, the "principle employer." Also the annual wage was based on the salary earned from the principle employer.

The principle employer was determined from the wage data. For the 16 percent with more than one employer, the employer with the highest calculated hourly wage was selected, provided that more than 100 hours of employment were reported. If no employer reported more than 100 hours or hours employed were missing for any employer, the employer with the highest wage was selected as the principle employer.

When calculating the data elements Quarterly Hours and Employment Related to Education, SBCCE did not use the principle employer. SBCCE determined the Quarterly Hours by summing hours worked for all employers, provided that all employers reported hours. Matches between SIC and CIP were for all SIC codes rather than just for the principle employer.

SIC/CIP Update Problem: Industrial (SIC) codes are updated irregularly, averaging once every 10 years. Community colleges may add new programs and thus new CIP codes at any time. The ES department has agreed to update the SIC to CIP match annually. For new SIC codes the match will be made with the same CIP as for the most closely related SIC until actual match information is available from the ES survey process.

Matches: Of the 14,096 students, matches were found for about 67 percent of the vocational completers:

* 9,254 with a Work-Force Status of 1, employed
* 133 with a Work-Force Status of 2, receiving unemployment benefits

Because the ES files do not include all workers (they exclude the self-employed, those in federal services, those working for firms delinquent in returning their unemployment insurance forms, and (for the year used in this study) those employed in very small agricultural firms). The match does not completely describe employment outcomes. During the pilot year, those unmatched also included those employed in neighboring states. SBCCE used the results of the 1987-88 Student Satisfaction Mail and Phone Survey (Appendix C) to conclude that the ES match describes about 75 percent of the employment experienced by community college vocational completers.

Completers with degrees were more likely to match than those with certificates or courses completers: 73 percent of degree completers matched compared to only 59 percent of "less than one year course completers."

Relationship of Jobs to Training: The match provided information on whether the firm in which the completer was employed had an occupation profile that included the training area of the students (CIP to SIC match). Eighty-two percent of the employed completers were in industries that related to their training according to this CIP to SIC match. The job-related-to-training measure varied considerably by field of study. When evaluated over several years time, it should provide useful information for decision-making at the program level.

The Employment Security staff tried two different protocols for the CIP to SIC match. The first, based on a national structure, provided meaningful information on about a third of the CIP codes. The second, based on the historical pattern in Washington, provided reasonably high quality information on all CIP codes. SBCCE has chosen the second protocol.

Unemployment: The match with ES files provides information on the "insured unemployed" which is a smaller number than what is commonly called the "unemployment rate." This number counts only those who actually received unemployment benefit checks in mid-March of the year following completion of the vocational program. The more common "unemployment rate" includes estimates of all who are unemployed whether or not they actually received benefits.

For the match period, the state insured unemployment rate of 4.1 percent is a meaningful comparison to the 1.4 percent of community college completers receiving unemployment benefits.

Job Upgrading and Retraining: Although the 1987-88 pilot was conducted later than desired, so that only a small number of completers could be matched before, during and after their program, the results can be used to estimate the percent of upgrade completers. Based on those for whom the status could be checked, about 40 percent of the 1987-88 vocational preparatory completers were really upgrading their job skills. That is: 30 percent staying in the same firm before, during and after their enrollment and 10 percent with the same industry, but different firms. Drawing a distinction between job upgrading and vocational preparation may be artificial for many students.

Strengths and Weaknesses of the ES Match

The strengths and weaknesses are primarily identified in comparison to the option of each college conducting a population survey of vocational completers. These surveys were conducted by mail and phone with results transmitted electronically to the SBCCE. Responses at the campus level ranged from 39 to 90 percent, with an average just under 70 percent.

Strength 1: Information on 75 Percent of Employed Completers. The previously used survey process provided complete information on about 70 percent of the employed completers (response rate). Thus the ES match process provides slightly more information at considerably less cost and probably with less non-response bias. For those colleges with an 80 to 90 percent response rate, however, the ES match provides less information than the survey.

Strength 2: Information for Small Sub-groups. Because the data are for 75 percent of all the employed completers, policy makers may be confident in the conclusions drawn even for small sub-groups, such as minority completers, the disabled, those who took ESL courses. Those sub-groups might easily be among the "no response" groups with a typical survey process.

Strength 3: Jobs Related to Training. Because the ES match is probably a less biased source than the survey and provides information on more completers than the survey, the jobs-related-to-training information at the summary level is more reliable for future decision making.

Strength 4: Inclusion of Course Completers. The old survey process, for reasons of expense, was limited to a study of program completers and those courses completers who were thought by the college to have employable skills. Those included in the latter category varied greatly by program and college. Given the minimal expense of matching social security numbers, the data match process included all who were defined as "completers." The inclusion of all course completers has allowed a more thorough study of outcomes for the half of vocational completers who leave without a degree or certificate.

Strength 5: Calculation of Job Upgrade Completers. The match of employment before, during and after enrollment allows for one method of identifying completers who are really upgrading job skills rather than preparing for a new job. The pilot study found 40 percent of completers in that category. The satisfaction survey also identified 40 percent employed in jobs related to their training before college.

This computerized proxy measure for job upgrade completers is especially useful for analysis at the program level which is not possible via sample survey techniques.

Strength 6: Meet Default Regulation Requirements. The federal government has approved the data match as he mechanism that can be used to provide placement information to entering students in compliance with requirements related to student loans.

Weakness 1: About 25 Percent of Employed Completers Not Matched. The match provides information on about 75 percent of those employed. SBCCE estimates that the other 25 percent of employed completers were:

* Self-employed workers: 8 percent of employed completers
* Working for other state, federal government, late reporting firms, and/or small agricultural employers: 17 percent of employed completers

SBCCE plans to compensate for this weakness by conducting a survey in 1991 of the non-matching completers from the 1988-89 class. The survey will be of all non-matching completers. SBCCE plans to conduct such a detailed survey about every five years.

Weakness 2: SIC to CIP Protocol. Determining if the completer's job is related to training using the ES match relies on a protocol matching the SIC and CIP codes. No information is available in the ES system regarding the occupation of the employees. Thus the industry occupation profile must be used for the match.

This protocol no doubt results in some inaccuracies in determining if employment is related to training. An electronics technician may be employed as a stockroom clerk at an avionics factory. This protocol would say the completer was in an industry related to training, but the job may have no relationship to the technical training. On the other hand, an employee of a school district with training as a social legal advocate may be coded as in a job not related to training, but actually be employed as an ombudsman in the school system, a job that may be related to training.

Because the protocol matches only the industry and not the occupation to the CIP code and that protocol has potential for inaccuracies, the jobs related to training information is best used as follows:

* Summary level data such as for all with degrees, in one of 10 industry groups, in one of 15 CIP groups, and
* Comparison at the CIP level from year to year.

The measure of job related to training is critical to effective outcomes assessment. The quality of SBCCE outcomes information would be improved if employers could include the occupation in the unemployment insurance reporting system.

Weakness 3: The Insured Unemployment Rate. The match provides information only on the insured unemployment rate - those currently claiming unemployment insurance benefits. This number is not comparable to commonly used "unemployment rate" which is adjusted for all those unemployed and ineligible for insurance benefits. Since this is not the commonly understood rate, the unemployment match figures may be easily misunderstood.

Based on the past and current survey results, we can assume that only about one third of the unemployed among vocational completers were included in the insured unemployed: 133 matched as insured unemployed and an estimated 291 were unemployed and seeking jobs but not receiving benefits.

Process of Education and Military Matches

Those students who were not matched with the ES files were then matched against education files to determine if they might be enrolled in a college. The match was first made against the SBCCE Student Management Information System (SMIS) to determine if program completers may have continued at their original college (some certificate students do continue) or if course completers may have transferred to another community college. The student matches if they were enrolled in the winter quarter in the year after they left the college (same match period as used in the ES match).

SBCCE then asked OFM to match the remaining social security numbers against a database of enrollments in public and private four-year institutions in Washington to determine if the completers had transferred to a four-year college.

The military match was not completed during the pilot study. The ES staff completed this match for the class of 1988-89 and found 100 matches.

Matches: The status of the 4,709 completers not matched with ES was:

* 4 percent were enrolled at a community college (172)
* 4 percent attended four-year institutions (191)
* 1 percent (40) attended vocational technical institutes
* 91 percent (4,306) remaining unmatched

These matches were consistent with the findings from the satisfaction survey.

Strengths and Weakness of Education Match

Strength 1: Program Level Information. Programs vary in the extent to which completers continue their education rather than becoming employed, the match provides fairly complete education information at the program level.

Strength 2: Cost Effective for Education Information. While the match does not meet the need to know what happened to all former students, it does provide fairly complete information on education status at a very low cost.

Weakness 1: More than 800 Still Not Matched. Between the insured unemployed information and the education match, the administrative databases provide information on an estimated 31 percent of the not-working population. The survey process, though costing considerably more and having greater potential for bias, provided information on about 70 percent of that population.

Completers who failed to match could be any of the following: working in another state, self-employed, employed by the federal government, in the military, full-time homemakers, retired, disabled and unable to work, traveling, seeking work but not receiving unemployment benefits.

Based on the satisfaction survey results, we can project that those not in the workforce and not matched (845) were distributed as follows:

Full-time homemakers	290
Retired, disabled, traveling, military, other	555

Based on the survey and the 1988-89 match, it is assumed that less than one percent joined the military after completing their vocational program.

To compensate for the non-match weakness, SBCCE will survey those not matching once every five years. The first such survey will be conducted for the 1988-89 students.

Weakness 2: Transfer Institution Not Identified. Currently the matching process does not capture the name of the college the completer is attending. Thus no analysis by type of institution (independent, public research, public regional) is currently possible. By the 1989-90 match, SBCCE plans to include the college code for all education matches.

Weakness 3: Not all Colleges Participate. Several of the smaller independent colleges in Washington do not provide information for the applications match process. They were thus not matched in this process. Likewise transfers to four-year technical institutes in other states were not matched.

Weakness 4: Only Fall Quarter Transfer Matched. The employment match is for winter term, but since the four-year data are for fall, that was used as a proxy. Starting with the 1989-90 class, OFM will be able to provide winter match data.

Conclusion

The pilot study showed that SBCCE could use administrative databases to provide some of the information needed for outcomes assessment of the community college system. While the information is not as complete as might be desired, the coverage compares favorably with the much more costly survey process. The information available by data match also includes details which have not been provided in previous surveys such as a proxy measure for job upgrading and information on industry and firm size.

APPENDIX C

1987-88 STUDENT SATISFACTION MAIL AND PHONE SURVEY METHODOLOGY

SPRING 1990

Survey Purpose

SBCCE developed a satisfaction survey for two purposes: 1) to elicit descriptive information about the educational and employment outcomes of vocational preparatory completers, and 2) to rate completer satisfaction with a wide range of services and educational experiences they had encountered at the college.

The survey was timed to gather former students' impressions about a year-and-a-half after leaving the college. This time was chosen to assure that the students would have had an opportunity to test their learning in the work environment, but would not have already completed a substantial amount of additional training.

"COMPLETERS"

All vocational preparatory students who leave the college after completing 10 or more vocational credits are considered "completers."

There are two types of completers: program and course completers. Each type is further divided into two categories:

PROGRAM COMPLETERS

- degree completers
- certificate completers

COURSE COMPLETERS

- attending 1 year or more

Population Selected

The population from which the survey sample was drawn consisted of all vocational preparatory program completers (degrees or certificates) and employed course completers who had completed at least a year of study. The population included only those with a phone number or address in the student's file and a valid race code (about 13 percent had neither).

This population of 7,189 represents 51 percent of the total vocational program and course completers. It excludes those who completed less than a year of study and those who completed more than a year (with no degree or certificate) and did not match on the ES files. SBCCE made these exclusions both to match previous surveys and a study being conducted for the vocational technical institutions.

Survey Sample

A sample of 955 vocational program and course completers was interviewed by phone or mail between April 23 and June 22, 1990. The sample was designed to obtain a representative view of the entire population of former vocational preparatory program completers and employed course completers and to provide information about the total population of minority completers in those same groups.

SBCCE designed the questionnaire in conjunction with the Vocational Outcomes Research Review Group and in cooperation with the Office of Financial Management staff responsible for the Governor's Investment in Human Capital Study.

For the survey, SBCCE selected a random sample of former students who met the following criteria:

* Had a valid social security number. About three percent of the former 1987-88 vocational students did not have a valid social security number. "Dummy" social security numbers are used for those enrolled in correctional programs and for some foreign students. Due to record keeping changes, Shoreline Community College also had a high rate of invalid social security numbers. Most other colleges had less than one half percent invalid numbers.

  No automated transcript file existed for Big Bend Community College in 1987-88, thus none of their former students were included in the study. (About 25 completers were thus missing from the population.)

* Completed a vocational program in 1987-88 with a certificate or degree OR completed at least 45 credits (one year of study) and had been employed in Washington in the first quarter of 1989 (as indicated by the Unemployment Insurance files.)

  The numbers who met this criteria were:

Degree completers	4,677
Certificate completers	2,495
Employed course completers with 45 or more credits	1,130
TOTAL	8,302

  The research plan did not include efforts to obtain information on the satisfaction of students who left community college vocational programs with less than a year of course work (45 credits). About 36 percent of students who leave vocational programs do so without a certificate and with less than 45 credits.

* Had either a phone number or address in the student record and had a valid race/ethnic code of White, Asian, African American, Native American or Hispanic. In the case of white students, have been selected in a random sample. For all other students simply being a group member assured selection as the entire population was included in the sample.

About 87 percent of the selected population had an address or phone and had a valid race/ethnic code. The population and sample were as follows:

	Selected Population	Sample
White	6,373	1,019
Asian and Pacific Islander	415	411
African American	167	167
Native American	113	113
Hispanic	121	120
Total	7,189	1,830

Note: Due to computer protocols, slightly fewer than expected Asians were selected and one fewer Hispanic.

Survey Distribution

SBCCE obtained the addresses and phone numbers for the students from the automated transcript files of the colleges. In most cases both the address and phone had been updated in April 1988 at the student's last registration. From the pilot study, SBCCE assumed that it would be possible to verify the phone number of about half to two-thirds of the students, to verify the address of only about a third and to be unable to reach about two in ten, despite efforts to obtain current directory information.

For this reason both a mail and phone approach to the survey was designed. The following efforts resulted in identifying usable phone numbers for 54 percent of the sample:

* A prior letter, including a letter from the Governor's office stressing the importance of the survey, was sent to each in the sample. The letter included the phone number to be used for the interview. Members of the sample were urged to call an 800 number to correct phone numbers that were in error.

* US West was provided with the survey listing and asked to correct all phone numbers and addresses or identify the numbers as correct.

* SBCCE staff called phone numbers of those not validated as correct, but functioning.

The prior letter also allowed SBCCE to identify those for whom no valid address existed (post office could not forward).

If the phone number could not be validated by one of these methods, and a valid address existed, SBCCE mailed a request letter and questionnaire, a follow-up post card, and if needed a second letter and questionnaire.

If the phone number was validated, the Gilmore Research Group based in Seattle attempted to contact the individual to complete the interview. Interviews were conducted by trained staff using the Gilmore Research Group's computer assisted telephone interviewing system. That system displays questions on a monitor from which they are read to the respondent and answers are immediately entered into the micro-computer by the interviewer.

Cooperation and Completion Rates

The cooperation and completion rates for this survey are found in Table I. The cooperation rate is the ratio of the number of completed interviews with the combined total of refusals and completed interviews. The overall cooperation rate was 72 percent. The rate for the phone interviews was higher than the mail survey with one follow-up. The completion rate is the comparison between completed interviews and the total potential respondents. The rate of completion for this survey was 71 percent with phone being higher than mail. This completion rate compares favorably with the target of 75 percent completion (goal of 1,000).

TABLE I
COOPERATION AND COMPLETION RATES
1987-88 VOCATIONAL COMPLETERS SATISFACTION SURVEY
SPRING 1990

Status	Phone	Mail	Total
Potential Respondents			
A. Completed Interviews	665	290	955
B. Partial Completes	4		4
C. Refusals	130	238	368
D. Language Problems	9		9
Sub Total	809	528	1,336
Excluded from Sample			
E. Never Reached	182		182
F. No Address/Phone			312
Total	990	528	1,830
Cooperation Rate A/(A+C)	84%	55%	72%
Completion Rate A/(A+B+C+D)	82%	55%	71%

Potential Sources of Error

Four sources of potential error affect the quality of results from any sample survey: sample coverage of the population being surveyed, sampling error, measurement error, and response rate. Efforts to overcome these potential sources of error are described below.

Non-coverage error. About 13 percent of the selected population was excluded from the random sampling process because their student record failed to contain either a phone number or address or a valid race code. It is assumed that the

completers without phone or address information preferred that the college not release their directory information. Some students refused to provide race information at the time of enrollment.

It is likely that those who refuse to provide race information and those who request that their directory information not be revealed are different than other students. This study, like all those that rely on student supplied information, suffers from non-coverage error for these students. In addition, more than 17 percent of the sample (312) was unreachable because their phone number could not be verified and their address was no longer forwardable. The number of unreachable people was minimized through efforts to update the lists, but no doubt this 17 percent represents an important source of error.

The use of both mail and phone versions of the survey allowed SBCCE to overcome non-coverage error that would have been inherent in a phone survey alone or in a two-month mail survey alone. In many ways the mail and phone survey groups were similar: race/ethnic background, sex, reason for enrolling, unemployment status, continuing education status.

But in other ways the mail survey did reach former students who were somewhat different in their characteristics than the phone survey, as shown in Table II.

TABLE II
DIFFERENCES IN MAIL AND PHONE RESPONDENTS
1987-88 VOCATIONAL COMPLETERS SATISFACTION SURVEY
SPRING 1990

Characteristics	Mail	Phone
Not working before college	5%	13%
Employed part-time	7%	15%
Health practitioner (percent of working)	41%	24%
Clerical, admin support (percent of working)	12%	18%
Keep same job after college as before	9%	15%

Based on experience with this survey, SBCCE highly recommends the combined use of mail and phone surveys for this type of research.

Sampling error. Sampling error is not an issue for the minority group members in this survey (though response rate is a potential source of error). The entire population of each minority group was included in the survey sample. This total population approach was used to assure sufficient number of respondents to test whether community college outcomes are different for each minority group.

For whites a random sample was drawn. The sample of 538 white respondents represents the population at an accuracy level of about +/- four percent (3.8), assuming no other sources of error. This means that 19 out of 20 times that a random sample of this size is drawn from this population, the results on a yes or no question should be within four percentage points of the percent for all whites in this population. Tests of significance reported for the study were based on this sampling error.

To account for the undersampling of whites, their results were weighted by 6.25 for all analysis of the total population.

Measurement error. This factor includes whether the questions asked measure what the researchers intended, whether interviewers or the mailed questionnaire ask the question in such a way that it is understood, and whether the answer is accurately recorded by the interviewer or data entry staff.

SBCCE pretested the instrument by phone interview with former students from South Puget Sound Community College. The Gilmore Research Group staff were trained before the interviews began to assure that the questions were asked clearly and that results were recorded accurately. Their work was conducted from a central interview facility with a supervisor present at all times to monitor interviews and assist with any difficulties. The mail survey data entry staff used software that checked for data entry error. Staff work was periodically checked for accuracy as well.

The mail survey gave respondents an opportunity to view all possible responses before answering the question, while, for some questions, the phone respondents did not hear a list of possible responses. Mail respondents were also free to change their answers at anytime, while in the phone interview respondents seldom ask to go back and review responses to earlier questions. These methods have been shown in the past to results in somewhat different responses to seemingly identical questions. Typical differences are that phone respondents tend toward the more positive end of the rating scale.

A comparison of the mail and phone responses found little statistically significant differences in rating scale response, but differences followed the typical pattern of higher positive response from the phone interviews. Table III provides the means for all items which were significantly different. Even where no significant differences were found, the mail respondents tend to have a lower mean than the phone respondents. **Thus when these survey results are compared to other surveys conducted only by phone or only by mail, this likely measurement error must be recognized.**

TABLE III
MEANS FOR SCALE QUESTIONS WITH DIFFERENCES BY MAIL OR PHONE
1987-88 VOCATIONAL COMPLETERS SATISFACTION SURVEY
SPRING 1990

Scale: 1 = not at all satisfied
5 = very satisfied

Questions	Mean Mail	Phone
Satisfaction with college's contribution to specific skills for your job	4.0	4.3
Satisfaction with college's contribution to your science skills	3.6	3.8
Satisfaction with practical experience offered in courses	3.8	4.0
Satisfaction with help with selecting courses (advising)	3.6	3.9
Satisfaction with variety of courses offered in my program	3.8	4.0
Satisfaction with usefulness or relevance of training to current job	3.9	4.2
Satisfaction with role of community college courses in increasing your job opportunities	3.9	4.2
Satisfaction with access to up-to-date equipment	3.6	3.8

There were statistically significant differences in responses to some of the non-rating scale questions for mail and phone respondents as well. These suggest that the different interview environment for mail and phone can influence the results. The most important difference was that mail respondents were apparently much freer to be uncertain. They typically were significantly more likely to select "not sure" or "uncertain" than were phone respondents. See Table IV. **Again, these differences must be recognized when the results of this study are compared to a mail only or phone only survey.**

TABLE IV
NOT SURE RESPONSE FREQUENCIES FOR NON-SCALED QUESTIONS WITH DIFFERENCES BY MAIL OR PHONE
1987-88 VOCATIONAL COMPLETERS SATISFACTION SURVEY
SPRING 1990

Questions	Mail	Phone
Met Objective?		
Not Sure	5%	1%
Areas with less training than wanted?		
Don't Know	16%	3%
Did you take placement test?		
Uncertain	8%	2%
After pre-college classes, prepared?		
Not Sure	17%	3%
Plan to enroll next year		
Uncertain	21%	12%
Would you attend again?		
Uncertain	11%	2%
Would you recommend to a friend?		
Uncertain	11%	1%

The different response patterns for mail and phone respondents on a small number of survey items (15 of 109) is a type of measurement error.

Response rate. Ideally, all persons randomly selected will respond to the survey, an objective which is almost never accomplished. The lower the response rate, the greater the concern that results might be different than they would be had everyone responded. Non-respondents' status and opinions may be different than respondents' status and unfortunately, there is no way of knowing that for certain. The 71 percent completion is acceptable given a phone interview with up to five call-backs and mail questionnaire with one post-card and one complete follow-up.

As shown in Table V, the only group that may have been more likely to be among the non-respondents were those who were young (average age of respondent group was higher than sample or population).

TABLE V
CHARACTERISTICS OF THE POPULATION, SAMPLE AND RESPONDENTS
1987-88 VOCATIONAL COMPLETERS SATISFACTION SURVEY
SPRING 1990

	Population		Sample		Respondents	
White	6,373	88.6%	1,019	55.7%	538	56.3%
Asian/Pacific Is.	415	5.8%	411	22.5%	212	22.2%
African American	167	2.3%	167	9.1%	84	8.8%
Native American	113	1.6%	113	6.2%	60	6.3%
Hispanic	121	1.7%	120	6.6%	59	6.2%
Male	3,009	41.9%	824	45.0%	409	42.8%
Female	4,178	58.1%	1,005	54.9%	544	57.0%
Degree	3,981	55.4%	932	50.9%	526	55.1%
Certificate	2,155	30.0%	612	33.4%	318	33.3%
45 credits +	1,053	14.6%	286	15.6%	109	11.4%
Disabled	453	6.3%	108	5.9%	68	7.1%
Limited English	956	13.3%	350	19.1%	186	19.5%
Average Age (during quarter of last enrollment)	30.4		30.3		31.6	
Firm Size (employed only)						
Small (1-19)	2,443	26%			227	27%
Medium (20-249)	2,961	32%			286	34%
Large (250+)	3,850	42%			329	39%

All four sources of error received careful attention in the design and execution of this survey. Reasonable efforts were made to minimize all sources of error with the non-coverage error remaining relatively large.

Based on these efforts and past survey experience, SBCCE believes that these results can be accepted as representative of vocational preparatory program completers and employed course completers from community colleges in 1987-88.

Request for the Report

Both mail and phone respondents were asked if they would like a copy of the survey results when available in fall 1990. About 77 percent or 739 respondents expressed a desire to obtain results.

April 6, 1990

STATE OF WASHINGTON
State Board for Community College Education

FORMER VOCATIONAL STUDENT SATISFACTION SURVEY
WASHINGTON COMMUNITY COLLEGES
SPRING 1990

Early this month you received a letter from Governor Booth Gardner explaining our plans to conduct a telephone survey of students enrolled in Washington community colleges in 1987-88. Even though we have been unable to attain your current phone number, it is very important that we hear from you. This survey is identical to the one being conducted by Gilmore Research Group. Please complete the survey and return it in the enclosed stamped envelope.

Q-1. What was your reason for being enrolled in a Washington community college a year and a half or two ago? Was your reason...

1 TO TAKE COURSES RELATED TO CURRENT OR FUTURE WORK
2 TO EXPLORE A CAREER DIRECTION
3 TO TRANSFER TO A FOUR-YEAR COLLEGE AND EARN A DEGREE THERE
4 OTHER, PLEASE DESCRIBE _____

(Select only one reason which best applies.)

Q-2. How was your community college course work related to your current or future job?

1 PREPARE FOR A NEW JOB
2 GAIN SKILL FOR A CURRENT JOB
3 PLAN FOR A CAREER CHANGE
4 OTHER, Please describe _____
5 DOES NOT APPLY TO MY CURRENT OR FUTURE JOB

(Select only one reason which best applies.)

Q-3. To what extent have you met your objective while enrolled at the community college? (Select only one best response.)

1 MET COMPLETELY (Go to Q-3A)
2 MET PARTIALLY (Go to Q-3A)
3 NOT MET AT ALL
4 CHANGED OBJECTIVES (Go to Q-4)
5 NOT SURE (Go to Q-4)

If 3, why haven't you met your educational objective? Give a brief explanation, then skip to Q-4.

Q-3A. Did your community college course work and experience help you meet your objective?

1 YES (Go to Q-4)
2 UNSURE (Go to Q-4)
3 NO

If 3, what could the college have done differently to assure that the course work would have helped you meet your objective?

Q-4. Washington community colleges train students to possess work-related skills and abilities that employers say they want. Listed below is a skill or ability. Please rate how satisfied you are with your college's contribution to your development in that area. On a 1 to 5 scale, with 5 meaning very satisfied and 1 meaning not at all satisfied, how satisfied are you with your college helping you to improve? (Full scale is 1 = not at all satisfied, 2 = little satisfied, 3 = somewhat satisfied, 4 = mostly satisfied, 5 = very satisfied.) If the item does not apply, use 0.

	Not at all satisfied				Very satisfied	NA
1) Your ability to follow directions	1	2	3	4	5	0
2) Your ability to work with others	1	2	3	4	5	0
3) Your ability to make appropriate judgments related to work	1	2	3	4	5	0
4) Your ability to adapt to change on the job	1	2	3	4	5	0

	Not at all satisfied				Very satisfied	NA
5) Your reasoning and problem solving skills	1	2	3	4	5	0
6) Specific skills for your job	1	2	3	4	5	0
7) Your positive work habits and attitudes	1	2	3	4	5	0
8) Your ability to speak effectively	1	2	3	4	5	0
9) Your ability to write effectively	1	2	3	4	5	0
10) Your ability to spell accurately	1	2	3	4	5	0
11) Your math skills	1	2	3	4	5	0
12) Your science skills	1	2	3	4	5	0
13) Your computer skills and knowledge	1	2	3	4	5	0
14) Your knowledge of appropriate safety practices	1	2	3	4	5	0
15) Your office automation skills	1	2	3	4	5	0

Q-4A. Are there any skill areas where you received less training at the community college than you now feel you needed? If so, please describe.

1 YES
2 NO (Go to Q-5)
3 DON'T KNOW, NO RESPONSE (Go to Q-5)

Q-4B. What are they?

Q-5. In general, how satisfied are you with your community college education with regard to each of the following? Again, use a 1-5 scale where 5 means very satisfied and 1 means not at all satisfied. (If the item does not apply, select 0.)

How satisfied are you with the...	Not at all satisfied				Very satisfied	NA
1) Quality of instruction	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						
2) Quality of courses in general	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						
3) Practical experience offered in courses	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						
4) Help with selecting your courses (advising)	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						
5) Information on conducting a job search	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						
6) Help with developing resume writing and interviewing skills	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						
7) Making known job openings related to your field (Posting or other notice)	1	2	3	4	5	0
Comment if dissatisfied (1 or 2):						

	Not at all satisfied				Very satisfied	NA
8) Variety of courses offered in my program Comment if dissatisfied (1 or 2):	1	2	3	4	5	0
9) Usefulness or relevance of training to current job Comment if dissatisfied (1 or 2):	1	2	3	4	5	0
10) Availability of classes at the times I could attend Comment if dissatisfied (1 or 2):	1	2	3	4	5	0
11) Interaction with faculty outside the classroom Comment if dissatisfied (1 or 2):	1	2	3	4	5	0
12) Role of the community college courses in increasing your job opportunities Comment if dissatisfied (1 or 2):	1	2	3	4	5	0
13) Access to up-to-date equipment Comment if dissatisfied (1 or 2):	1	2	3	4	5	0
14) Availability of information about programs of interest offered at other institutions Comment if dissatisfied (1 or 2):	1	2	3	4	5	0

Q-6. How satisfied are you with the community college contribution to your development in each of the following areas? Again, 1 is not at all satisfied and 5 is very satisfied.

	Not at all satisfied				Very satisfied	NA
1) Learning independently	1	2	3	4	5	0
2) Working cooperatively in groups	1	2	3	4	5	0
3) Recognizing your rights, responsibilities and privileges as a citizen	1	2	3	4	5	0
4) Understanding differing philosophies and cultures	1	2	3	4	5	0
5) Defining and solving problems	1	2	3	4	5	0
6) Understanding the interaction of society and the environment	1	2	3	4	5	0

Q-7. Did you use any of the following special services at your community college? (Select all that apply)

1 YES, CHILDCARE
2 YES, DISABLED STUDENT SERVICES
3 YES, VETERAN SERVICES
4 YES, UPWARD BOUND, EOP, SMART
5 YES, MINORITY STUDENT SERVICES
6 YES, WOMEN'S CENTER SERVICES
7 YES, FINANCIAL AID SERVICES
8 NO (Go to Q-7D)

	Not at all satisfied				Very satisfied	NA
Q-7A. How satisfied are you with the first service you used, listed above? Name the service: _____	1	2	3	4	5	0
Q-7B. How satisfied are you with the second service you used? Name the service: _____	1	2	3	4	5	0
Q-7C. How satisfied are you with the third service you used? Name the service: _____	1	2	3	4	5	0

Q-7D. Were there any support services you needed while you were a student that you did not receive?

1 YES
2 NO (Go to Q-8)
3 DON'T KNOW, NO RESPONSE (Go to Q-8)

Q-7E. What were the services you needed?

Q-8. The following are all factors that influence people's choice of courses and program of study. For each factor, please show if it generally applied or generally did not apply to you as a factor in influencing the courses and program you took:

	Applied	Did Not Apply
1) Courses and/or program quality	1	2
2) Availability of transportation to get to classes	1	2
3) Conflict between classes and work or family commitments	1	2
4) Could get a job with only a short amount of training	1	2
5) Cost of courses or program	1	2
6) Other courses or programs of interest to me were full	1	2
7) I was not qualified for other courses or programs of interest to me	1	2

Q-9. Did you take any placement tests at the community college to aid you in determining your skill level in writing, reading, math or study skills? (Circle all that are true.)

1 YES, WRITING PLACEMENT TEST
2 YES, READING PLACEMENT TEST
3 YES, MATH PLACEMENT TEST
4 YES, STUDY SKILLS PLACEMENT TEST
5 NO
6 UNCERTAIN

Q-10. While at the community college, did you enroll in any pre-college (courses numbered under 100) writing, reading, math or study skills courses to bring your writing, reading, math and/or study skills up to college-level? (Circle all that are true.)

1 YES, WRITING
2 YES, READING
3 YES, MATH
4 YES, STUDY SKILLS
5 NO (Go to Q-11)
6 UNCERTAIN (Go to Q-11)

Q-10A. After completing pre-college courses, were you prepared for college-level course work? (Select one.)

1 YES (Go to Q-10B)
2 NO (Go to Q-10C)
3 NOT SURE (Go to Q-11)

Q-10B. Did you develop your college-level skills...(Circle all that are true.)

1 FROM YOUR PRE-COLLEGE COURSES ALONE
2 FROM YOUR COURSES PLUS TUTORING
3 FROM YOUR COURSES PLUS OUTSIDE HELP FROM FRIENDS OR FAMILY
4 FROM OUTSIDE HELP ALONE AND NOT FROM YOUR COURSES
5 OTHER (Please describe): _____
(Go to Q-11)

Q-10C. Do you believe the reason you did not develop college-level skills was because of...(Select all that apply.)

1 POOR QUALITY COURSES
2 TOO FEW COURSES TAKEN
3 NOT ENOUGH CONFIDENCE IN MYSELF
4 NOT ENOUGH INTEREST OR MOTIVATION BECAUSE COLLEGE-LEVEL SKILLS AREN'T NEEDED FOR MY WORK OR FIELD
5 NOT ENOUGH TIME TO STUDY AND DO HOMEWORK
6 IT WAS DIFFICULT TO CONCENTRATE
7 DON'T KNOW
8 OTHER (Please describe):

Q-11. Did you look for a job after leaving the community college?

1 YES (skip to Q-11B)
2 NO ——→

Q-11A. If no, what did you do after leaving the community college? (Select only one which best applies.)

1 CONTINUED MY EDUCATION ELSEWHERE
2 JOINED THE MILITARY
3 STARTED A JOB - ALREADY HAD OFFER, NO NEED TO LOOK
4 CONTINUED THE JOB I HAD WHILE IN COLLEGE
5 RESUMED JOB I HAD BEFORE COLLEGE
6 DID NOT GO TO SCHOOL OR WORK (not employed and not seeking work)
7 OTHER (Go to Q-12)

Q-11B. If yes, where did you seek employment? (Select only one which best applies.)

1 NO GEOGRAPHIC LIMIT
2 THROUGHOUT THE UNITED STATES ONLY
3 IN THE PACIFIC NORTHWEST ONLY
4 IN WASHINGTON STATE ONLY
5 IN THE COUNTY WHERE YOU WENT TO SCHOOL AND THE SURROUNDING COUNTIES ONLY
6 IN THE COUNTY WHERE YOU WENT TO SCHOOL ONLY
7 IN SOME OTHER SPECIFIC AREA (Please specify):

Q-11C. How satisfied were you with the job availability where you sought employment? (Select only one which best applies.)

1 COMPLETELY UNSATISFIED
2 SOMEWHAT UNSATISFIED
3 SOMEWHAT SATISFIED
4 MOSTLY SATISFIED
5 VERY SATISFIED

Q-12. What is your current employment situation (this week)?

1 WORKING FULL OR PART-TIME (Go to Q-12A to Q-12F)
2 NOT WORKING (Go to Q-12G, page 10)

Q-12A. Which best describes you?

1 SELF-EMPLOYED IN OWN BUSINESS, PROFESSIONAL PRACTICE OR FARM
2 FULL-TIME EMPLOYED -- THAT IS, 32 HOURS A WEEK OR MORE
3 PART-TIME EMPLOYED -- THAT IS, LESS THAN 32 HOURS A WEEK

Q-12B. Would you describe your present job as consistent with your career goals or work you are doing temporarily until you get regular work?

1 TEMPORARY WORK, NOT WHAT I PLAN TO KEEP DOING
2 REGULAR WORK FOR ME

Q-12C. In what way would you describe your present job as related to your training?

1 RELATED OR SOMEWHAT RELATED TO TRAINING
2 NOT RELATED TO TRAINING (Go to Q-13)
3 UNCERTAIN (Go to Q-13)

Q-12D. How would you describe the level of your work, given your training? Would you say it was...

1 DEFINITELY BENEATH MY LEVEL
2 SOMEWHAT BENEATH MY LEVEL
3 APPROPRIATE FOR MY LEVEL
4 TOO ADVANCED FOR MY LEVEL
5 DON'T KNOW

Q-12E. What is the title of your current job (also describe duties)?

_____

Q-12F. Before taking your current job, how prepared do you think you were in the following areas? Would you say you were not at all prepared, somewhat prepared or highly prepared? If the area does not apply to your work, select 0.

	Not at all Prepared	Somewhat Prepared	Highly Prepared	NA
1 Ability to follow written directions	1	2	3	0
2 Ability to follow oral directions	1	2	3	0
3 Ability to work with others	1	2	3	0
4 Ability to make appropriate judgments related to work	1	2	3	0
5 Reasoning and problem-solving ability	1	2	3	0
6 Positive work habits and attitudes	1	2	3	0

Go to Q-13.

Q-12G. Which best describes you?

1 FULL-TIME HOMEMAKER
2 FULL-TIME MILITARY
3 UNEMPLOYED, ACTIVELY LOOKING FOR WORK
4 RETIRED
5 NOT EMPLOYED, NOT ACTIVELY LOOKING FOR WORK

Q-13. How are you currently using the skills you developed through your educational program? (Circle all that apply.)

1 USING IN MY JOB
2 DOING VOLUNTEER WORK
3 USING IN MY HOME
4 OTHER, PLEASE DESCRIBE _____
5 NOT USING MY SKILLS

If 5, why aren't you using the skills you developed through your educational program?

Q-14. Compare your current earnings from work to your earnings before you enrolled in the educational program at the community college. Were your total earnings before taxes today...

1 A LOT MORE THAN BEFORE YOU ATTENDED COMMUNITY COLLEGE
2 SOMEWHAT MORE THAN BEFORE
3 THE SAME (Go to Q-15)
4 SOMEWHAT LESS THAN BEFORE
5 A LOT LESS THAN BEFORE
6 DID NOT WORK BEFORE

Q-14A. How much impact did what you learned at the community college have on the change in your earnings? Did what you learned have a large, small or no impact on the change in your earnings?

1 LARGE IMPACT
2 SMALL IMPACT
3 NO IMPACT
4 NOT CERTAIN

Q-15. Regardless of the financial loss or gain, do you feel your experiences at the community college have improved the quality of your life?

1 DEFINITELY
2 PROBABLY
3 UNCERTAIN
4 PROBABLY NOT
5 DEFINITELY NOT

Q-16. What would you say were the primary strengths of your educational program? (Select all that apply.)

1 NONE
2 WELL ORIENTED TO JOB MARKET
3 WELL STRUCTURED
4 GOOD FACULTY
5 AFFORDABLE
6 UP-TO-DATE
7 INTERESTING
8 OTHER (PLEASE DESCRIBE) _____

Q-17. What would you say were the primary weaknesses of the program (the same program)? (Select all that apply.)

1 NONE
2 NOT ORIENTED TO JOB MARKET
3 POORLY STRUCTURED
4 POOR FACULTY
5 EXPERIENCE
6 NOT UP-TO-DATE
7 UNINTERESTING
8 OTHER (PLEASE DESCRIBE) _____

Q-18. Are you now enrolled or do you plan to enroll in any classes or training within the next year?

1 ENROLLED NOW
2 YES, PLAN TO ENROLL
3 NO PLANS TO ENROLL (Go to Q-19)
4 UNCERTAIN (Go to Q-19)

Q-18A. Which one of the following best describes how your course work relates to your current or future job? Will the course work help you to...

1 PREPARE FOR A NEW JOB
2 GAIN SKILLS FOR A CURRENT JOB
3 PLAN A CAREER CHANGE
4 BOTH FOR CURRENT JOB AND CAREER CHANGE
5 OTHER, PLEASE DESCRIBE _____
6 DOES NOT OR WILL NOT APPLY TO MY CURRENT OR FUTURE JOB

(Select only one.)

Q-18B. Where would you say you are now getting most of your training or where will you get most of your further training? Will you be training at ...

1 WORK,
2 SAME COMMUNITY COLLEGE I ATTENDED BEFORE,
3 DIFFERENT COMMUNITY COLLEGE,
4 VOCATIONAL-TECHNICAL INSTITUTE,
5 FOUR-YEAR INSTITUTION, or
6 OTHER LOCATION? DESCRIBE _____

(Select only one.)

Q-19. How difficult or easy were community college courses for you?

1 EASY
2 SOME EASY, SOME DIFFICULT
3 MOSTLY DIFFICULT

Q-20. If you could go back, knowing what you know now, would you still attend the community college?

1 YES
2 UNCERTAIN
3 NO ⟶

If no, comment on why not:

Q-21. Would you recommend the community college to your friends and acquaintances?

1 YES (Go to Q-21A)
2 UNCERTAIN (Go to Q-22)
3 NO (Go to Q-21B)

Q-21A. If yes, what would you recommend about the community college?

Q-21B. If no, why would you not recommend the community college to friends or acquaintances?

We need a little background information about you when you first started at the community college.

Q-22. What was the most recent type of education you had completed when you **started** at the community college? Was it...

1 LESS THAN HIGH SCHOOL GRADUATE
2 HIGH SCHOOL GRADUATE
3 GED
4 SOME POST-HIGH SCHOOL EDUCATION -- COLLEGE, VOCATIONAL TRAINING, MILITARY, APPRENTICESHIP, BUT NOT DEGREE OR CERTIFICATE
5 CERTIFICATE OR DEGREE OF LESS THAN FOUR YEARS
6 FOUR-YEAR DEGREE OR HIGHER

Q-23. What was your family status when you **started** at the community college? Were you...

1 LIVING WITH PARENTS OR GUARDIAN
2 LIVING ON OWN OR WITH ROOMMATES
3 A SINGLE PARENT WITH CHILDREN OR OTHER DEPENDENTS IN YOUR CARE
4 COUPLE WITH CHILDREN OR OTHER DEPENDENTS IN YOUR CARE
5 COUPLE WITHOUT DEPENDENT CHILDREN
6 OTHER

Q-24. Were you employed before enrolling at the community college?

1 YES, FULL-TIME
2 YES, PART-TIME
3 NO (skip to Q-25)

Q-24A. Did you continue employment while attending the community college?

1 YES, SAME EMPLOYER
2 YES, DIFFERENT EMPLOYER
3 NO (skip to Q-24C)

Q-24B. Did you work fewer hours while taking classes than before enrolling?

1 YES, FEWER HOURS
2 NO, SAME OR MORE HOURS

Q-24C. Was your employment before you entered the community college related to your current job? Was it...

1 ENTRY LEVEL JOB IN SAME FIELD
2 JOB IN SAME FIELD BEYOND ENTRY-LEVEL
3 JOB IN RELATED FIELD
4 NOT RELATED
5 DID NOT WORK IN PAID JOB BEFORE COLLEGE

Q-25. Does anyone in your family, parents or brothers and sisters, have a Bachelor's degree from a college?

1 NONE
2 MOTHER HAS A DEGREE
3 FATHER HAS A DEGREE
4 BROTHER(S) OR SISTER(S) HAS A DEGREE
5 DON'T KNOW OR UNSURE
6 OTHER (Specify) _____

Q-26. What is your race?

1 WHITE
2 BLACK
3 NATIVE AMERICAN (INDIAN, ESKIMO OR ALEUT)
4 ASIAN OR PACIFIC ISLANDER
5 OTHER RACE

Q-27. Are you of Spanish/Hispanic origin?

1 NO (NOT SPANISH/HISPANIC)
2 YES, MEXICAN, MEXICAN-AMERICAN, CHICANO
3 YES, PUERTO-RICAN
4 YES, CUBAN
5 YES, OTHER SPANISH/HISPANIC

Thank you for your participation in the survey. Please return the survey in the enclosed stamped envelope. If you would like a copy of the results, please put your address on the back of the return envelope.

State Board for Community College Education
319 7th Avenue, FF-11
Olympia WA 98504-3111

WP:\files\lort\reports\satisfy2.sur

APPENDIX D

SURVEY OF WASHINGTON STATE EMPLOYERS SUMMER 1990

Senate Bill 6411, passed by the 1990 Legislature, mandated that the Office of Financial Management (OFM), with the advice of the Council on Investment in Human Capital, "administer a study of the training needs of the state's workforce, businesses, and the economy, including an evaluation of the training system."

Part of that study was an employer survey. To assure that employers were not overburdened with surveys, the SBCCE agreed to use that survey to meet the needs of the vocational outcomes research project. OFM agreed to include many of the questions which had been designed and tested by SBCCE for its own survey.

Survey Administration and Sample

The survey was administered by the Social and Economic Sciences Research Center (SESRC) of Washington State University between May and July, 1990. A sample of 11,063 employers was drawn from a population of about 54,000 firms that employed between 5 and 5,000 Washington residents. Government employers were included in the sample with certainty (all included). A stratified random sample was drawn from the private employers based the following strata: new employers, expanding employers, agricultural employers, employers with 5 to 249 employees, and employers with 250 to 4,999 employees.

Procedures

The questionnaire used in this study was created by representatives of the OFM in consultation with representatives of the community colleges, vocational technical institutes, secondary vocational programs and the SESRC. The questionnaires were mailed to the employers in the sample between May 18 and May 31, 1990. Each questionnaire was mailed with a cover letter from the SESRC, a letter signed by the Governor of the State of Washington, and a stamped return envelope. The cover letter announced the study and indicated why it was important for the respondent to complete and return the questionnaire. The letter from the Governor focused on the importance of the study and encouraged the respondents' participation. About a week after the initial mailing (between May 25 and June 7), a post card was sent to each of the respondents. The purpose of the post card was to prompt the respondent to complete and return the questionnaire. Additionally, it provided an opportunity to thank the respondents for their participation in the study. Between June 8 and June 21, 1990, approximately three weeks after the initial mailing of questionnaires, a second wave of questionnaires was mailed to those employers who had not yet responded by returning their questionnaires. These respondents were sent a new cover letter that reminded them of the original study and the importance of their participation. The cover letters were mailed with another copy of the questionnaire, the Governor's letter, and another stamped return envelope. On June 18, 1990, approximately eight weeks after the original mailing of questionnaires, the data collection ended and the completion rate statistics were compiled.

Data Entry

All questionnaires returned to the SESRC by July 18, 1990 were coded and keypunched by SESRC staff. The data were entered onto a computer using the Microcomputer Assisted Telephone Interviewing (MATI) facilities to aid in translating the survey into data files. All data were verified using the same system.

The MATI system displays the questions on a computer monitor and the keypuncher inputs the responses provided by each respondent in their questionnaires. Using the same system, another member of the staff verifies the entries made by the keypuncher making corrections as needed.

Response Rate

Table I presents the completion rate statistics for this study. A total of 11,063 questionnaires were mailed to the employers in this sample. Of these, 1,234 were returned blank and determined to be ineligible for the purposes of this study. Of these blank questionnaires, 1,187 were unable to be delivered to the business to which they were addressed, 45 were considered to not fit the eligibility requirements (that is, be a business that operates and employs workers in the State of Washington), and 2 were excluded for other reasons (i.e., death of the owner or the respondent provided information on business operations outside of the state). This left a net beginning sample of 9,829 eligible respondents. Of these, a total of 4,204 completed questionnaires, 279 refused to participate, and 5,346 did not complete nor return their questionnaires. This yielded a completion rate of 42.8%. This rate is considered to be just below average for mail surveys of this type.

TABLE I
COMPLETION RATE STATISTICS

Number of Employers		Description
11,063		Questionnaires mailed
1,234		Blank questionnaires returned
	(1,184)	Return to sender, undeliverable
	(45)	Ineligible
	(2)	Other
9,826		Eligible sample of respondents
4,204	(42.8%)	Completed questionnaires returned
279	(2.8%)	Refused to participate
5,349	(54.4%)	Questionnaires not completed nor returned

The sample of employers that returned the survey appears broadly representative of the original population from which it was drawn, suggesting that the findings can be interpreted as representing the perspective of businesses in Washington State on the issues of training and re-training.

Weighting

To adjust the responses to represent the 54,000 employers, the subgroups were weighted as follows:

New employers	1.805
Expanding employers	1.445
Government	.533
Others	.900

Use of Results for Vocational Outcomes

More than 1,000 employers responding to the survey said they had enough experience employing community college graduates to evaluate their skills. The outcomes analysis is based on the opinions of those thousand employers.

Employee Training & Retraining in the 1990's

A Survey of Washington State Employers

Please return your completed questionnaire in the enclosed envelope to:

Social and Economic Sciences Research Center
Washington State University - Pullman, WA 99164-4014

Thinking about the graduates of these schools or training programs, that your company has hired in the past three years, please answer the questions below for each type of educational program (columns on the next page) that you think you can evaluate.

Q36. How satisfied are you and your company with the skills, abilities, and work performance of graduates of the schools or training programs that you have hired from in the past three years? Would you say you are VERY SATISFIED, SOMEWHAT SATISFIED, SOMEWHAT UNSATISFIED, or VERY UNSATISFIED?

	A. Community College	Q36.
A. Speaking effectively	▼	1 2 3 4
B. Writing effectively		1 2 3 4
C. Spelling correctly		1 2 3 4
D. Math skills		1 2 3 4
E. Science skills		1 2 3 4
F. General computer skills and knowledge		1 2 3 4
G. General office automation skills		1 2 3 4
H. Specialized skills related directly to the job		1 2 3 4
I. Ability to follow written directions		1 2 3 4
J. Ability to follow oral directions		1 2 3 4
K. Ability to make judgments		1 2 3 4
L. Ability to work with others		1 2 3 4
M. Ability to adapt to changes in duties or responsibilities		1 2 3 4
N. Reasoning and problem solving ability		1 2 3 4
O. Ability to prioritize work		1 2 3 4
P. Quality of work		1 2 3 4
Q. Productivity		1 2 3 4
R. Acceptance of supervision		1 2 3 4
S. Positive work habits and attitudes		1 2 3 4
T. Enthusiasm for work		1 2 3 4
U. Appropriate appearance and manner		1 2 3 4

Q36. ANSWER CATEGORIES
1 = VERY SATISFIED
2 = SOMEWHAT SATISFIED
3 = SOMEWHAT UNSATISFIED
4 = VERY UNSATISFIED

Q37. Overall, how satisfied are you and your company with the work performance of employees that you have hired from these schools or training programs? → Q37. 1 2 3 4

Q38. In the future, do you think that you will hire graduates of these schools or training programs again? (Please circle YES or NO for each type of school.) → Q38. 1 YES

APPENDIX E

RELATED OUTCOMES RESEARCH PROJECTS

The SBCCE staff is currently conducting five other research projects related to system-level student outcomes:

Transfer Outcomes: Which students, among those with certain defining characteristics, transfer?

Writing Outcomes: Assessing faculty perceptions of community college student writing.

Developmental Outcomes: Assessing effectiveness of developmental education.

Adult Basic Skills Outcomes: Student satisfaction and outcomes survey.

Job Upgrading/Retraining: Student satisfaction survey.

For further information on the SBCCE Outcomes Research Agenda contact:

Bill Moore
Manager for Outcomes Research & Analysis
State Board for Community College Education
319 Seventh Avenue, FF-11
Olympia WA 98504
(206) 753-8296

APPENDIX F

WACC Student Outcomes Task Force - 1989-90

Jean Floten, Bellevue Community Community
Ron Hamberg, Seattle Central Community College
Bruce Kochis, Seattle Central Community College
Susan Mancuso, Whatcom Community College
Carl Opgaard, Tacoma Community College
Wally Simpson, Olympic Community College
Steve Van Ausdle, Walla Walla Community College

Loretta Seppanen, State Board for Community College Education
Sandy Wall, State Board for Community College Education
Jan Yoshiwara, State Board for Community College Education

WACC Student Outcomes Task Force - 1990-91

Greg Fitch, Big Bend Community College
Jim Ford, Skagit Valley Community College
Ron Hamberg, Seattle Central Community College
Arnie Heuchert, Wenatchee Valley Community College
Bruce Kochis, Seattle Central Community College
Susan Mancuso, Whatcom Community College
Charles Mitchell, Seattle Central Community College
Ray Needham, Tacoma Community College
Wally Simpson, Olympic Community College

Patricia Green, State Board for Community College Education
Bill Moore, State Board for Community College Education
Loretta Seppanen, State Board for Community College Education
Sandy Wall, State Board for Community College Education
Jan Yoshiwara, State Board for Community College Education

Vocational Outcomes Research Review Group

Dick Armstrong, Employment Security
Barb Bennett, Spokane Community College
Don Bressler, Spokane Community College
Charles Coddington, Centralia Community College
Pat Green, State Board for Community College Education
Ray Harry, State Board for Community College Education
Jeffrey Jaksich, Employment Security
Paul McCarrell, Peninsula Community College
Chris Miller-Panganiban, Highline Community College
Mildred Ollee, Seattle Central Community College
Loretta Seppanen, State Board for Community College Education
Phil Swanberg, Highline Community College

ERIC Clearinghouse for
Junior Colleges
DEC 14 1990

END

U.S. Dept. of Education

Office of Education
Research and
Improvement (OERI)

ERIC

Date Filmed

March 29, 1991